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Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 20

INTERNATIONAL BROADCAST INFORMATION SERVICE

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12 February 1980

WORLDWIDE REPORT
NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 29

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INTERNATIONAL PANEL APPROVES JAPAN'S NUCLEAR POLICY

OW151045 Tokyo KYODO in English 0944 GMT 15 Jan 80 OW

[Text] Tokyo Jan 15 KYODO--An international panel for nonproliferation of nuclear weapons and peaceful use of atomic power has approved Japan's nuclear policy, including reprocessing of used nuclear fuel and enriching uranium. The approval came in a report of the technical coordinating committee of the International Nuclear Fuel Cycle Evaluation (INFCE) that met in Vienna this month.

The report recognized Japan's assertion that it is indispensable for it to reprocess used nuclear fuel, utilize plutonium, introduce the fast breeder reactor and secure technology for enriching uranium in order to cope with the energy crisis. But the U.S. policy of the Carter administration seeking a freeze on reprocessing and plutonium utilization to prevent nuclear proliferation was downplayed in the report.

The final report of the INFCE reflected Japan's aim of nuclear development, which has been slowed by the strict U.S. restriction policy. However, the report has no binding force for participating nations and the Carter government holds the INFCE discussion has no bearing on talks between the U.S. and Japan. Early solution of the pending bilateral problems, including reprocessing, will be left to future negotiations.

The INFCE was created in October 1977 at the proposal of U.S. President Jimmy Carter and is participated in by 57 nations. It has been discussing nuclear problems for more than two years.

CSO: 5100

WORLDWIDE AFFAIRS

BRIEFS

NUCLEAR SCIENCE MEETING--Minister of Science, Technology and Environment Ong Kee Hui opened a 5-day meeting for the regional cooperative agreement for research, development and training related to nuclear science in Kuala Lumpur on 17 December. The meeting was organized by the Malaysian Government and the International Atomic Energy Agency. Bangladesh, India, Indonesia, the Republic of Korea, the Philippines, Sri Lanka, Thailand and Malaysia are taking part at the meeting. Hungarian and U.S. experts also are attending the meeting. [Kuala Lumpur International Service in English 0630 GMT 17 Dec 79 BK]

ITALIAN PUMPS FOR USSR--Rome, 11 Jan (ANSA)--The Soviet Union has placed an order for four pumps to use in its nuclear power program with the Italian "Terni" steel works, the first time it has gone abroad for machinery of this kind, it has been announced here. A company communique said yesterday that the "Terni" works, among the most advanced in Europe, would supply four pumps, each cast in a single block, for nuclear power-stations producing 1,000 megawatt. Each pump will weigh about fifty tons. "Terni" is a subsidiary of the state holding company "IRI" and the contract falls under cooperation between the Soviet Union and "IRI's" steel group, "FINSIDER." [Text] [Rome ANSA in English 0845 GMT 11 Jan 80 AU]

CSO: 5100

AUSTRALIA

REPORT TO PARLIAMENT RECOMMENDS LUCAS HEIGHTS CHANGES

Perth THE WEST AUSTRALIAN in English 22 Nov 79 p 51

[Text]

CANBERRA: Changes at the Atomic Energy Commission's research establishment at Lucas Heights (NSW) are recommended in a report released yesterday.

It recommends a reduction in the nuclear area and the development of new programmes in non-nuclear fields of research.

"The present programme at Lucas Heights does not reflect the best allocation of the establishment's resources and there is a need for a major change in direction," the report said.

The report, by the National Energy Research Development and Demonstration Council's review committee, was tabled in Federal Parliament by the National Development Minister, Mr Newman.

The committee concluded that a significant component of the total work at Lucas Heights did not have sufficient priority to justify its continuation.

The committee chairman, WA State Energy Commissioner, Mr J. Kirkwood, said the recommendations should not be viewed as a negation or criticism of past activities.

"It is simply time to change," he said.

The report recommended that the commission

be changed in structure and renamed "The energy research establishment—Lucas Heights."

Control and direction of the new organisation should be through a restructured form of the existing commission as the board of establishment.

Responsibilities relating to regulatory and licensing issues for nuclear reactors and associated matters should be transferred to a nuclear regulatory body under the aegis of the National Development Department.

The report said that internally, the research establishment should be restructured, with two separate but inter-acting components—one for nuclear research and the other for general energy research and development activity.

There should also be a small assessment unit to carry out appropriate studies and maintain statistics necessary for overseeing the national energy research development and demonstration programme.

Lucas Heights would continue as the major centre for nuclear research, concentrating on supporting the uranium mining and processing industry, and on environmental, nuclear waste disposal and safety matters.

However, the range and scope of other nuclear research would be reduced with a reduction in overall expenditure and commitment of resources to nuclear activities.

Every effort should be made with the new establishment to form close links with industry and to build up work of a specialised nature which it could undertake on contract to Commonwealth or State organisations or private industry.

The report noted that the production of radio-pharmaceuticals and radioisotopes for medical applications and for industry, plus associated production and applications research and development, had grown to be the biggest activity at Lucas Heights.

"There is evidence that the development of such a radioisotope organisation within the research establishment has inhibited the development of the most-effective radioisotope programme," it said.

It recommended that all commercial aspects of the utilisation of radioisotopes and radio-pharmaceuticals be vested in the Commonwealth Serum Laboratory or another similar organisation.

CSO: 5100

AUSTRALIA

DECISION ON OVERSEAS URANIUM REPROCESSING DUE IN 1980

Perth THE WEST AUSTRALIAN in English 20 Nov 79 p 9

[Text]

"CANBERRA: The Federal Government will announce early next year whether it will approve the reprocessing of Australia's uranium overseas.

A spokesman for the Deputy Prime Minister, Mr Anthony, said yesterday: "That matter is currently under consideration."

When the Prime Minister, Mr Fraser, announced the Government's safeguards policy in 1977, he said that the Government would keep its options open on reprocessing.

The bilateral safeguards policies, already signed with a number of countries, require Australian approval before reprocessing.

The Government is expected to base its decision on the report of the international nuclear fuel cycle evaluation study expected in February next year.

CSO: 5100

AUSTRALIA

ANTI-URANIUM SHAREHOLDERS PROTEST AT COMPANY MEETING

Melbourne THE AGE in English 21 Nov 79 p 22

[Report from Jane Sullivan]

[Text] An anti-uranium shareholder ejected from the annual meeting of EZ industries has been arrested and charged with trespass.

The action is seen as a test case for the one-share protesters — conservationists who have bought one share each in a company to be able to attend meetings and have their say.

A man has been bailed on his own recognisance to appear in Melbourne Magistrates Court on February 28. He intends to plead not guilty to the charge.

Five policemen and a policewoman ejected the man from EZ's annual meeting at the Southern Cross Hotel in Melbourne on November 13.

He was one of about 20 shareholders at the meeting who protested against EZ policies on uranium and pollution.

Many were members of Shareholders for Social Responsibility, a group which organises the one-share protests.

At the start of the meeting, EZ chairman, Sir Edward Cohen, warned the 250 shareholders that under an agreement with the Southern Cross, anyone who refused to obey the rules of the meeting could be treated as a trespasser.

He said no one should enter the roped area surrounding the directors' chairs, and that no one

should stand up to speak unless addressing the chair.

About 20 one and 13 security guards were present.

Conservationists frequently interrupted Sir Edward's address. One suggested the company should enter the heroin trade while another suggested the directors' salaries should be doubled so that they could eat and drink themselves to death.

The charged man has written to Sir Edward Cohen asking him to drop the charge and publish a public apology to himself and other shareholders. He has not yet had a reply.

EZ says the man is a legitimate shareholder entitled to attend meetings, but will not comment further on the case.

The management of the Southern Cross Hotel has refused to confirm or deny Sir Edward's reported statement that he had the hotel's permission to eject any shareholder who did not comply with his rulings.

The one-share protest for EZ critics has now become the 106-share protest. Like some other companies, EZ has put up its minimum purchase requirements for new shareholders.

CSO: 5100

AUSTRALIA

BID TO SET UP ENRICHMENT INDUSTRY

Rangoon THE WORKING PEOPLE'S DAILY in English 4 Jan 80 p 6

[Text] Canberra, 2 Jan--Australia took a step closer today to establishing its own uranium enrichment industry.

The Deputy Prime Minister, Douglas Anthony, announced a feasibility study on the setting up of a commercial enrichment industry in Australia.

Anthony, who is also the Minister for Trade and Resources, said a group of Australian companies had agreed to set up a joint venture to look at the problems involved.

The companies are the Broken Hill Proprietary Ltd (BHP), Colonial Sugar Refining Company (CSR), Peko-Wallsend (a partner in the Ranger Uranium Mine), and Western Mining Corporation.

Anthony said that with some 20 percent of the world's known low-cost uranium resources, Australia was well-placed to proceed with uranium enrichment.

But he added that there were, as yet, many aspects to be considered before any final commitment was made. These included such matters as the most appropriate technology to be employed, environmental factors, overseas partners, and the possibility of multinational participation.--NAB-AFP

CSO: 5100

MRS GANDHI ON NUCLEAR POLICY, SOVIET INTERVENTION

BK170912 Delhi Domestic Service in English 0830 GMT 17 Jan 80 BK

[Text] The prime minister, Mrs Indira Gandhi, has said that she is not for confrontation with non-Congress-I governments in the states. It is some opposition leaders who have now raised the issue. Mrs Gandhi was addressing a news conference in Trivandrum this morning.

Mrs Gandhi said the Janata and the Lok Dal governments have left behind gigantic problems and the first priority of her government will be to create the proper atmosphere for tackling them. Mrs Gandhi said there is no proposal for any major constitutional amendment by using her party's massive majority in parliament.

About nuclear policy, the prime minister said we do not believe in producing atom bombs. But, we should have the freedom in developing nuclear energy for peaceful purposes.

Referring to the Silent Valley project in Kerala, Mrs Gandhi said it is worthwhile to see whether the same benefit could be achieved without disturbing the ecological balance of the valley.

The prime minister arrived in Trivandrum this morning on a 2-day visit to Kerala. Earlier speaking to newsmen at Begumpet airport in Hyderabad, Mrs Gandhi said that the primary task of her government is to restore the nation's economy which is in a bad shape. It needs to be brought back to the road of development once again. Asked about the possible expansion of her cabinet, she said certainly not before parliament meets. Mrs Gandhi said her government will consider bringing in fresh antidefection legislation. In fact, her previous government had discussions with the opposition but no broad agreement could be reached.

About the Soviet action in Afghanistan, the prime minister said India does not support outside intervention in any country, but, she added, the Soviet Union entered Afghanistan at the invitation of the Afghan Revolutionary Council.

On her arrival at Trivandrum airport, Mrs Gandhi was received by, among others, the Kerala governor, Mrs Jyothi Venkatachalam, and the state Congress-I leaders.

Later addressing a public meeting in Trivandrum, Mrs Gandhi emphasized the need for the country to constantly move forward along the well-defined direction to achieve stability. She said stability under her regime would mean development, prosperity, communal harmony and safeguarding the interests of the backward and weaker sections of society. Details of Mrs Gandhi speech are still coming in.

INDIA

'TIMES OF INDIA' ON U.S. ARMS TO PAKISTAN, NUCLEAR FUEL

EK161427 Bombay THE TIMES OF INDIA in English 12 Jan 80 p 8 BK

[Editorial: "Highly Mixed Up"]

[Text] In its desperate anxiety to respond quickly to the Soviet military intervention in Afghanistan, the United States has mixed up matters which have nothing to do with one another. From their point of view, the Americans have reasons to be concerned over the Soviet action. But their response is almost a case of Pavlovian reflex. They have decided to rush military aid to Pakistan without caring for the possible consequences. Judging by past experience, infusion of foreign arms into Pakistan usually encourages adventurous tendencies in that country and the temptation to embark on an adventure may be greater in the case of a beleaguered military regime, especially if domestic pressure on it to hold elections increases. India can look after its security even in the event of U.S. rearmament of Pakistan, but it will in no way add to Pakistan's security. On the contrary, it can make Pakistan even more vulnerable. The use of U.S. arms to help the Afghan insurgents can provoke the Soviet Union. There is no guarantee that, in such an eventuality the U.S. would be able to take any effective counter-action. Mr. Brzezinski has promised to go to the "defence of Pakistan--if necessary with U.S. forces." But will the introduction of U.S. troops into Pakistan not set in motion a dangerous chain reaction?

That apart, the Americans have mixed up the supply of U.S. nuclear fuel for Tarapur with arms shipments to Pakistan. To add a further "sweetener" to the proposed sop for this country, they have also hinted at the possibility of releasing a navigational system for the IAF's newly-acquired fleet of the Jaguars which the Americans were earlier unwilling to sell to India. By such measures, they can hardly hope to do a balancing trick between India and Pakistan. As for the nuclear fuel for Tarapur, it has nothing whatever to do with either the Soviet Union's intervention in Afghanistan or the U.S. decision on arms for Pakistan. The U.S. is bound by contracts to supply the nuclear fuel for Tarapur until 1993. It has gone back on this commitment on the strength of a retroactive law that requires recipients of nuclear fuel to accept highly discriminatory full-scope safeguards which this country rightly refuses to do. Even now, Mr Carter is not shifting from the basic American position. All he is promising is to sanction two long overdue shipments by an executive order. This does not solve even the limited issue of fuel supplies. Perhaps a comprehensive Indo-U.S. dialogue is called for to take stock of the changed situation in south and south-west Asia.

CSO: 5100

INDIGENOUS DESIGN FOR NARORA PLANT

New Delhi INDIAN EXPRESS in English 1 Dec 79 p 9

[Text] New Delhi, Nov 30 (UNI) India will standardise the design of the atomic power station at Narora in Uttar Pradesh.

The standardised design will be used for two additional projects before the country indigenously designs 500 mwe reactors.

Narora power station, now under construction, consists of 235 mwe heavy water reactors and have incorporated several new features and concepts, including earthquake resistant buildings and reactor components.

Among the new features of the Narora reactors are an integral calandria-end-shield assembly, two independent fast acting shut-down systems for safety and reliability and a simplified water-filled calandria vault.

This has been disclosed by Dr H. N. Sethna, Chairman of the Indian Atomic Energy Commission (IAEC), in an article in the International Atomic Energy Agency (IAEA) bulletin.

Dr Sethna says for certain components, such as reactor coolant pumps and steam generators, "we have decided to standardise not only for the current size of reactors under construction, namely, 235 mwe, but also for the next size of 500 mwe. We propose to achieve this by using twice the number of components for the larger reactors and defer the scaling-up effort required by our industry to a larger state."

Dr Sethna says the country's third atomic power station, consisting of two heavy-water reactor units of 235 mwe each, the first of which is expected to attain criticality next year, is being built near Madras.

India is one of the few countries at present continuing with the development of natural-uranium-fuelled reactors. The major reason has been India's preference for a reactor system that can be operated using indigenous resources.

This system also has the advantage of an efficient burnup, producing significant quantities of plutonium for use in fast reactors, according to Dr Sethna.

JAPAN

NUCLEAR SAFETY COMMISSION PUBLIC HEARING OPENS

OW170255 Tokyo KYODO in English 0238 GMT 17 Jan 80 OW

[Text] Takahama, Fukui Pref., Jan 17 KYODO--Questions and protests opened the Nuclear Safety Commission's (NSC) first public hearing Thursday on the safety of two nuclear reactors Kansai Electric Power Co. plans to build here. The hearing was the NSC's first since the nuclear safety watchdogs body was set up just one year ago.

The panel was intended to hear local residents' opinions of nuclear plants and have them reflected in the NSC's "double check" on the results of safety examinations conducted and submitted for the reactors by the International Trade and Industry Ministry. Public distrust of the safety of nuclear power, aroused after a radiation accident on Japan's first nuclear-powered ship *Mutu* off Aomori Prefecture in late 1974, drove the government to introduce a "dialogue" formula proposed by a private advisory organ in 1976.

Sixteen residents picked by the NSC from the townspeople of Takahama and three neighboring towns stated their views at the hearing, while 120 others observed the session. Also present were 36 special observers, including Rinzo Hamada, mayor of Takahama city. Katsuomi Kodama, deputy vice minister of the ministry's Natural Resources and Energy Agency, took the platform to brief the hearing on his ministry's safety checks of two nuclear generators and answer questions raised by the residents.

Hard-line nuclear foes in the town, however, boycotted the hearing and rallied outside the building where it was in session, joined by supporters who gathered from other sites of nuclear plants throughout the country. Some 500 protestors, including socialists and labor unionists backing them, were confronted by about 300 riot police.

The ralliers claimed that the hearing was undemocratic, saying the number of questioners and observers is limited and questions are limited to 10 minutes each. They said they fear such a "work ritual" for the promotion of nuclear power projects may be abused in similar hearings planned in several other towns.

Kansai Electric Power intends to build two light-water reactors, both capable of generating 870,000 kilowatts, at its existing nuclear power station on the Otomi Peninsula. The utility brought the first reactor into operation there in 1974 and the second the following year.

CSO: 5100

NUCLEAR POWER PLANT VIABLE IN 15 TO 20 YEARS

Alternatives Limited

Kuala Lumpur BUSINESS TIMES in English 14 Nov 79 p 1

[Article by Jimi Ngoh]

[Excerpts]

IT will be cheaper for Malaysia to switch from conventional to nuclear energy for the generation of electricity 15-20 years from today, an international expert on nuclear power said yesterday in Kuala Lumpur.

Speaking to reporters after giving a talk on the "Possible role of nuclear power in Malaysia 1980 to 2000," Mr J.A. Lane said that while capital costs for a nuclear plant will be higher, this will be offset by lower operating costs.

Mr Lane, who is from the International Atomic Energy Agency, is a consultant to the National Electricity Board (LLN) study on the use of nuclear energy which is in the final stages of completion.

Also attending the talk were officers from the Ministry of Science, Technology and Environment, Petronas, Puspati (Tun Ismail Atomic Research Centre), and SIRIM while Mr J.C. Torres of the Philippines from the IAEA itself participated in the discussions.

Mr Lane presented figures to show that the capital cost of an oil-fired steam turbine plant of 600 megawatt capacity will come up to \$1,018 per kilowatt or a total of \$608.8 million.

A nuclear plant of similar capacity will cost \$2,444 per kilowatt or a total of \$1,464 million.

If a nuclear plant of a larger capacity — 900 megawatt is contemplated, capital cost works out to only \$1,928 per kilowatt or a total of \$1,732 million.

Based on these figures, an LLN official said that using a nuclear plant of 900 megawatt capacity will bring about cost savings of about \$200 million per year.

Mr Lane noted that there do not seem to be much alternative to the use of nuclear power in Malaysia in the 1980's — the amount of natural gas available in the country is only limited, and there is not much exploitable hydro-electric power.

The capital cost of a gas fired steam turbine plant is much lower — only \$688 per kilowatt for a 600 megawatt unit, or a total of \$379.8 million. Running cost at \$49 per megawatt hour, while lower than that for fuel oil, is still higher than that for a nuclear plant.

An LLN official said that a decision will have to be made soon on the use of nuclear power under the national energy policy since it would re-

quire a period of 12-15 years before a nuclear plant can be launched in the country.

The LLN study which began in June is expected to be ready for submission to the government in about two months' time.

On possible sites for a nuclear plant, the LLN official indicated that from two separate studies, it appears a site on the east coast of Peninsular Malaysia is more suitable.

Besides population density, the availability of cooling water, gradient of the sea front and the geological foundation structure are factors.

Sites in Trengganu and Johore are being considered, additional data on the water catchment areas, possibility of flooding, availability of transport and the cost of connecting supply to the main electricity grid are being gathered.

While a 900 megawatt nuclear plant will be able to supply almost three quarters of Peninsular Malaysia's present needs for electricity, it will only provide about one-tenth of the anticipated requirements in the 1980's.

Opposition from Environmentalists

Kuala Lumpur BUSINESS TIMES in English 20 Nov 79 p 20

[Text]

THE wisdom of Malaysia undertaking or contemplating to undertake nuclear related projects was yesterday questioned by two public organizations.

Sahabat Alam Malaysia, a Penang-based environment protection group urged the government to reconsider the establishment of a nuclear research centre proposed for Bangi in Selangor on safety grounds.

Its president, Encik S. M. Mohamed Idris in a letter to the Science, Technology and Environment Minister, Tan Sri Ong Kee Hui, said, "No amount of safety standards, precautions and guarantees could hide the evils that the nuclear industry represents."

The proposed Tun Ismail Nuclear Research Centre (Puspati) is aimed at training Malaysians in nuclear technology, in particular for medical purposes.

The more outspoken Environmental Protection Society of Malaysia (EPM) questioned the motive behind the suggestion by an International Atomic Energy Agency official of the benefit of the National Electricity Board building a nuclear-powered electricity generation plant by 1980.

Mr J. A. Lane, who is a consultant to the NEB on the potential use of nuclear energy, had said that it would be cheaper for Malaysia to switch to nuclear energy for electricity generation.

EPM wants to know who is "pushing" for the nuclear option — the NEB or the IAEA. The society claims that the IAEA has not maintained its independence or impartiality when it comes to nuclear debate.

"Its track record is one of a relentless drive to push for increased global use of nuclear power, using the argument that economic development can only be achieved through increased electrification," the society says.

EPM wants the NEB and Mr Lane to make public the recommendations and participate in an open discussion with it (the society) and other interested Malaysians before finalising the report for submission to the government.

Meanwhile a top energy official, who declined to be identified, said Malaysia does not immediately need to consider nuclear energy as an alternative energy source. The prevailing conditions and the indigenous expertise do not favour immediate adoption of nuclear energy.

He said although it is true that domestic oil production at the current rate of output and proven reserves will not last much more than a decade, Malaysia has other safer energy options like hydro-electric, gas and coal.

He pointed out that Sarawak alone has vast potential for hydro-electric development to satisfy the needs of the whole

country for many more years to come. The state too is believed to have substantial coal deposits.

One reliable estimate puts Malaysia's non-associated gas reserves as well in excess of what it has committed to Japanese buyers for 20 years from 1982.

The Bintulu LNG project, which will supply the Japanese consumer, will in the 20-year period, recover about eight trillion cubic feet of gas to produce about six million tonnes of LNG a year.

The official said it is best for Malaysia not to rush headlong into nuclear energy development. It should instead keep that option open until such a time when it becomes absolutely necessary to go into nuclear energy.

Hopefully by that time, Malaysia would have acquired enough expertise and nuclear fission technology has been perfected to provide maximum safety.

They reminded the government of the danger of nuclear energy as evidenced by the Three Mile Island incident in the United States and the closure for safety reasons of Japanese nuclear plants.

They pointed out that President Marcos of the Philippines is demanding the builder of the country's first nuclear power plant to improve the design of the 630 MW reactor before he would permit any further work on the facility.

CSO: 5100

NUCLEAR TRAINING OFFER TO DEVELOPING COUNTRIES

Seoul KOREA TIMES in English 22 Nov 79 p 3

[Text]

KUALA LUMPUR (AFP) — Pakistan is prepared to train Malaysian scientists in nuclear technology for peaceful purposes, its ambassador, Rahim Khan, said here Tuesday.

He said his country had recently made an offer to Malaysian scientists and others from the Third World countries to pursue the field.

Addressing a Rotary Club here on the cooperation of both countries with particular reference to nuclear energy, Rahim Khan, added that this was possible due to the close and brotherly relations between both countries.

Pakistan believed that the knowledge in nuclear technology should be shared and developed among the developing countries and Malaysia is no exception, he said.

"We believe that the Third World countries have a right to benefit from the peaceful applications of nuclear technology for the betterment of their people and to achieve this, we should cooperate with each other," he added.

Rahim Khan said scientific knowledge could not be monopolized either by an individual or by a nation for it was the common heritage of all man-

kind and all attempts to monopolize nuclear technology while advanced countries were therefore doomed to failure.

CSO: 5100

PAKISTAN

POLICY DRAFT: SELF RELIANCE IN N-FUEL CYCLE

Lahore THE PAKISTAN TIMES in English 12 Jan 80 pp 1, 5

[Text]

Intensified search for uranium and other nuclear minerals and acquisition of modern technology of uranium exploitation has been emphasised in the related section of proposed new science policy dealing with the nuclear energy.

According to reliable sources, the draft of new science policy has already been circulated among concerned quarters for comments. As

soon as these comments and suggestions are received by the Science and Technology Committee, which has prepared the draft, it will present the final draft to the Federal Government for approval by the Cabinet.

It is stated the policy is expected to be announced in the first quarter of the current year which has been declared the Science Year.

It has also been proposed and emphasised that self-reliance was essential in nuclear fuel cycle, including fabrication and recycling of fusionable materials as well as production of the moderator and fuel enrichment.

Regarding the solar energy, the policy proposed technology for the utilisation of solar energy for cooling and heating of water and space.

In this respect it has also been proposed that method and technology could be developed for exploiting the solar energy for provision of power and water supply in rural areas.

It was learnt some of the suggestions and comments on the science policy envisaged the policy should not only focus its attention on giving proposals in regard to the development of science and technology but should also provide programme for the achievements of the same.

Suggestions have been made that the policy should also provide plans ensuring development in science and technology.--PPL

CSO: 5100

PEOPLE'S REPUBLIC OF CHINA

BRIEFS

GUANGDONG URANIUM DEPOSITS--The No 705 geology team of the Guangdong Geology Bureau has discovered large deposit of uranium ore in a granite region of the Mesozoic Era. The deposit has an economic value reaching the advanced level of similar ore throughout the country. The team was commended by the State Council. The area of the uranium ore is 70 square km. The discovery of the ore is of important significance for developing our country's atomic energy industry. [Guangzhou Guangdong Provincial Service in Mandarin 1130 GMT 26 Dec 79 HK]

CSO: 5100

PHILIPPINES

NEW CONDITIONS SET FOR NUCLEAR PLANT CONSTRUCTION

Kuala Lumpur BUSINESS TIMES in English 15 Nov 79 p 18

[Text]

MANILA, Nov. 16

PRESIDENT Ferdinand Marcos ordered that the suspension of the construction of a nuclear plant west of Manila would continue unless the contractors introduced fundamental changes in design and adopted additional safety measures.

Mr Marcos said in a statement his government would seek a moratorium from payment of interest on loans and other liabilities in financing the project costing US\$137,500 a day until these matters were settled.

The President issued the order following a report to him by a special presidential commission which investigated the safety of the projected US\$1.1 billion plant, being provided by the US Westinghouse Corporation.

The investigation followed the nuclear power accident on Three Mile

Island in the US earlier last March.

The statement said the report of commission, chaired by Justice Minister Ricardo Puno, declared the present plant design "not safe" adding, "It is an old design, plagued with unresolved safety issues like other Westinghouse designs under review by the US Nuclear Regulatory Commission and thus a potential hazard to the health and safety of the public.

Gordon C. Hurlbert, president of Westinghouse Power Systems Company, said his firm has not heard directly from its customer, the National Power Corporation of the Philippines, but he issued a statement calling the plant "as safe as any plant of its type currently operating in other nations and in the United States today." — Reuter

CSO: 5100

SOUTH KOREA

FOUR-FOLD INCREASE IN NUCLEAR POWER BY 1991 PLANNED

SK070302 Seoul HAPTONG in English 0238 GMT 7 Jan 80 SK

[Text] Seoul, Jan. 7 (HAPTONG)--South Korea will have 13 nuclear power plants, by 1991 to increase the share of nuclear power units in the nation's total power generating capacity from the current 8.5 percent to 34.3 percent. This was revealed in a long-term power resources development plan (1979-1991) mapped out by the Energy-Resources Ministry.

Under the long-term plan, five nuclear power units now under construction will be dedicated by 1986 to expand the share of nuclear power units in the nation's total generating capacity to 24 percent. South Korea has a 587,000-kilowatt nuclear power unit now in operation at Kori near Pusan.

Seven more nuclear power plants each with a rated capacity of 900,000 kilowatts will be erected between 1987 and 1991 to increase the share to 34.3 percent, ministry sources said.

However, the share of thermal power plants in the nation's total power-generating capacity will be reduced from 81.2 percent to the end of 1978 to 60.9 percent in 1986 and again to 48.9 percent in 1991, the sources said.

The long-term plan calls for increasing the nation's total power-generating capacity from the present 8,035,000 kilowatts to 10,386,000 kilowatts in 1981, 19,613,000 kilowatts in 1986 and further to 32,163,000 kilowatts in 1991, the sources said.

In an attempt to decrease Korea's dependency on foreign oil, the share of oil-fueled thermal power plants in the nation's total power generating capacity is projected to dip from 71.3 percent at the end of 1978 to 24.1 percent in 1991, while that of coal-fueled thermal power units will rise from 9.9 percent to 21.7 percent, the sources disclosed.

By 1991, seven more pumping-up power plants each with a rated capacity of 400,000 kilowatts will be built, along with liquified natural gas (LNG) power generating facilities totaling one million kilowatts and a 400,000-kilowatt tidal water power unit, the sources added.

CSO: 5100

SOUTH KOREA

NUCLEAR POWER PLANT AT KORI RESUMES OPERATION

SK070124 Seoul HAPTONG in English 0114 GMT 7 Jan 80 SK

[Text] Seoul, Jan. 7 (HAPTONG)--South Korea's first nuclear power plant at Kori near Pusan resumed its operation last Saturday after a repair work that took about 70 days, it was learned at the state-run Korea Electric Company (KEC) today. The repair work started on Oct 28 last year to check the nuclear reactor and turbine generators, and one-third of nuclear fuel needed for the power unit was replaced, KEC sources said.

Korea's first nuclear power plant has a rated generating capacity of 587,000 kilowatts.

Although the Kori nuclear unit resumed its operation last Saturday, it will take about one more month for the nuclear power plant to go into full-fledged commercial operation, the sources added.

CSO: 5100

BRIEFS

SIX NUCLEAR POWER PLANTS--The government has finally decided to construct six nuclear power plants with a rated generating capacity of 900 MW each between 1987 and 1991, the second five-year electricity source development period. With their completion, the ratio of power generation from nuclear plants will increase from 8.5 percent in 1980 to 34.3 percent in 1991. The government initially planned to construct eight nuclear power plants during the second five-year power development period, but the overall economic setback expected in coming years drove the Korea Electric Co. to reduce the number of nuclear plants by two. The nation's total power generation capacity will amount to 19.6 million kw by 1986 and 29.5 million kw by 1991. The nation now has one nuclear power plant in commercial operation and will have five more by 1986. Meanwhile, the government has decided not to construct any oil-fired thermal power plants from next year. The nation's dependence on oil for power generation will be reduced from 71.3 percent as of the end of 1978 to 39 percent in 1986 and 24.1 percent in 1991.

[Text] [Seoul THE KOREA TIMES in English 28 Dec 79 p 7]

NUCLEAR SCIENTISTS AWARDED--The 20th anniversary of the foundation of the Korea Atomic Energy Research Institute was celebrated yesterday at the auditorium of the KAERI by some 200 scientists and officials concerned in the Korean nuclear industry including Science and Technology Minister Song Choa-kyong. During the ceremony seven experts in nuclear energy including Cha Chong-hui, associate director of KAERI, were given government prizes for having greatly contributed to research on and the development of the Korean atomic energy industry. Among the prize-winners are Pak Chan-kol, a senior researcher on radio-chemistry and Kang Tae-ung, a physician at the Cancer Research Hospital who each received the presidential awards. After the ceremony, trial products manufactured for the encouragement of local production of mechanical parts for use in nuclear power plants were shown to the participants. The origin of the KAERI traces back to 1959 when the Atomic Energy Board was established for the purpose of promoting the peaceful exploitation of atomic energy. In 1967 the board was renamed the Office of Atomic Energy with the establishment of the Science and Technology Ministry, but in 1973 the KAERI opened near Taenung on the outskirts of Seoul combining the Office of Atomic Energy and the Atomic Energy Bureau at MOST. The institute has so far worked the development of nuclear technology, safety analysis and personnel training for the construction and management of the Kori Nuclear Plant Unit 1, the first in Korea. In addition, the KAERI has contributed much to the formulation of long-term energy policy by the government through the plan for the construction of a home-produced heavy water type power plant.

[Text] [Seoul THE KOREA TIMES in English 28 Dec 79 p 8]

INTERNATIONAL AFFAIRS

SOVIET ENVOY SPEAKS AT CZECH NUCLEAR POWERPLANT CEREMONY

LD172356 Prague CTK in English 2000 GMT 17 Jan 80 LD

[Text] Bratislava--The construction of the first nuclear powerplant in Czechoslovakia, at Jaslovske Bohunice, is a unique example of the fraternal cooperation of the Soviet and Czechoslovak people, Soviet Ambassador to Czechoslovakia Vladimir Matskevich said here on Thursday.

Vladimir Matskevich was speaking at a ceremony in which he presented Soviet state distinctions to the best Czechoslovak and Soviet builders of the nuclear powerplant.

The project shows that the socialist countries use the achievements of the scientific-technological revolution to the benefit of man, to the benefit of a happy and peaceful life of mankind, he said, and appreciated the work of teams taking part in the construction of the nuclear power plant and their contribution to the promotion of the friendly relations between the Soviet Union and Czechoslovakia.

The ceremony was also attended by Jozef Lenart, member of the Czechoslovak Communist Party Presidium and first secretary of the Slovak Communist Party, who congratulated the winners of the distinctions and wished them much success in their further work.

CSO: 5100

CZECHOSLOVAKIA

NUCLEAR POWER STATION PROGRESS IN DUKOVANY CRITICIZED

Prague RUDE PRAVO in Czech 21 Nov 79 p 3

[Article by F.Balas, chairman of CPCZ Building Site Committee and J.Bohac, RUDE PRAVO staff member: "Performance, not Slogans"]

[Text] The development of our national economy, outlined in the Guidelines for the Economic Development of the CSSR in 1978-1980, adopted by the 15th CPCZ Congress is predicated on a corresponding development of the Czechoslovak electrification system. Since nuclear energy is the only prospective source of additional power the construction of our new nuclear powerplant at Dukovany in the Trebic okres has become a matter of vital importance.

In July the CSSR Government presidium set the deadlines for the supply of power to our industry by individual units. The deadline for unit No 1 was the end of March 1983, for No 2 31 January 1984, for No 3 the end of September of the same year and for No 4 30 June 1985. The units, each with a capacity of 440 MW, will supply our industry with power already by the end of the next five-year plan; generation of this power by thermal units would require 640,000 tons of brown coal a month.

The CSSR Government presidium has set final deadlines for the preparation of technological documentation for the construction projects and their completion and intermediate deadlines for the progress of construction and assembly work for individual construction years. This set the pace of work aimed at meeting individual deadlines for the start of trial operations at Dukovany.

Stringent Conditions

The construction of a nuclear powerplant is a complicated task. The prerequisite for fulfilling it at a predetermined date and for meeting all quality requirements is a responsible approach to the task by the designers, the investor and the construction and assembly enterprises. The participants in the construction of the nuclear powerplant at Dukovany are aware of the difficulties

encountered in getting the construction project under way in past years and wish, therefore, to complete this year those principal tasks which would improve the work progress prospect for the next year. At issue was primarily building construction work in the amount of 358 million crowns, raising construction and assembly work efficiency and quality, proper coordination of the work and improvement of work safety provisions and services for workers.

The Reality

Several necessary project tasks were fulfilled, such as for example the completion of insulation and the start of reinforcement and assembly work on the drainage canal of main production unit No 2, the construction start of the engine room of main production unit No 1, and the start of other construction site installations for the general equipment supplier. Work has also begun on the complex of pumping station installations on the Jihlava River and delivery lines, the general supplier built the main skeletal heating duct and fulfilled many other important tasks. The drainage system along the main production unit was completed, albeit with a delay. Building construction work was completed for the installation of the cooling water pipeline in front of the main production unit No 1, work has begun on the complex of installations for the supply of drinking water from a well at Hrotovice and on other installations of the power plant.

But some tasks were not completed to the envisioned extent. Work on the auxiliary boiler room installations including the distribution network, the rough construction of the pipeline preparation plant, the electric outlets around the main construction pit and some other tasks are behind schedule. In the third quarter the volume of unfulfilled work is most serious on the construction of cooling tower No 1 where the subcontractor failed to start work on the second cooling tower on time; the rate of laying concrete for the body of the first cooling tower slowed down so that the volume of unfulfilled work runs to more than ten million crowns. The volume of unfulfilled work on the reactor hall of the main production unit No 1 runs to 18 million crowns. The building of installations on the main construction site and work on the housing hotel I at Trebic is also behind schedule.

Some specific assembly tasks, for example of junction B of the cooling water pipeline and the pipeline in front of the main production unit No 1 were completed within deadlines. But some third quarter assembly tasks are left over for completion in the fourth quarter.

The Causes of Delay

The analysis of the progress of work on the construction of the Dukovany nuclear power plant carried out by the investor disclosed a number of serious shortcomings, primarily a shortage of labor, some partial deficiencies of construction equipment, delays in the completion of assembly work, unavailability of some types of materials and products, failure to ensure deliveries of the desired capacities by foreign subcontractors within the required deadlines and also some other causes of delay.

Within the investor's sphere of responsibility lies the delay in the fulfillment of partial and general assembly tasks due to a shortage of manpower in certain professions among the general contractor's labor force, the delay in the preparation of project documentation and other shortcomings. A key prerequisite for improving the fulfillment of the increasing volume of unfulfilled construction tasks at Dukovany is the concentration of construction capacities which in the investor's view could eliminate the delay.

But this requires a considerable increase of shift work. So far, second or third shifts exist only in concrete mixing and concrete laying for the main production unit and in some earth moving work. Only some subcontractors, for example Armabeton, Dopravni stavby and Ingstav carry on some construction projects in shifts.

The shortage of labor of the investor's general project contractor has been discussed repeatedly. The authorized labor recruitment quotas in the Trebic okres have been exhausted.

For Public Good

This year full scale work has begun on the construction of the Dukovany nuclear power plant after several years of preparations. Considerable progress has been achieved even though some of the tasks expected to be fulfilled within three-quarters of this year remain unfulfilled. But all suppliers do not yet fully realize the vital importance of the power plant for our national economy. Discrepancies in the performance of individual participants at all project levels have a deleterious effect on the progress of work.

Many economic and party organs, concerned with the construction of the nuclear power plant, are taking steps with the view of improving the situation considerably. But the deadlines for individual deliveries and their quality for a project of such importance and urgency must be governed by national criteria and not by the priorities of individual enterprises.

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CSO: 5100

POLAND

RADIOACTIVE CONTAMINATION OF PRIVATE RESIDENCE UNDER INVESTIGATION

Warsaw GLOS PRACY in Polish 19-20 Jan 80 p 4

[Text] On 18 January the Public Prosecutor's Office in Krakow made known the preliminary results of an investigation concerning radioactive contamination by radioactive substances of private living quarters in that city to the extent where it was a threat to life and health.

In August of 1979 a resident of Krakow, Anna D., went to the SANEPID [Sanitary and Epidemiological] Station and requested to be thoroughly examined because, as she claimed, her husband was using radioactive materials against her. The examination of Anna D. did, in fact, confirm the early stages of leukemia which could be the after-effects of post-radiation contamination. At the same time, her former husband, Antoni D., moved out of Anna D.'s apartment, taking with him the two children from his first marriage. In December 1979, a small cloth saturated with a radioactive substance attached to a pipe in the bathroom was found.

Action which was immediately taken by the teams of the Central Radiological Protection Laboratory and the sanitary authorities uncovered strong radioactive places in the rooms occupied by Anna D., her father, former husband, brother and children. Radioactive contamination was discovered in places to which objects coming from those rooms were brought; all persons suspected of being in contact with radioactivity have been taken to the Institute of Industrial Medicine (IMP) in Lodz. The investigation led to the radioactive contamination workshop of the Faculty of General Chemistry of the Academy of Agriculture in Krakow. The head of that workshop was Dr Antoni D., the former husband of Anna D. The unit which he headed handled radioactive isotopes. There arises the suspicion, therefore, that Antoni D. was taking out certain quantities of radioactive materials and was using them against his former wife. He was morbidly jealous and exhibited strong indications of mental deviation. Upon receiving a second summons to come to the prosecutor's office, he committed suicide.

At present, Anna D., her father, and the two children are under watchful medical care in Lodz. The lives of the children are not endangered.

The investigation in this case is continuing.

SALE OF SENSITIVE TECHNOLOGY TO IRAQ DENIED; COMMENTS

Bomb Knowhow Denied

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 12 Jan 80 p 5

[Text] Brasilia--In an official note released by the presidential palace, the minister-chief of staff of the armed forces and future Brazilian ambassador in Iraq, General Samuel Alves Correa, yesterday denied that he had said that Brazil might "teach Iraq to build the atomic bomb or transfer technology to it that would lead to that end."

Following is the text of the official note released by the government:

"The minister chief of staff of the armed forces, Gen Samuel Alves Correa, officially and categorically denies the statement that was attributed to him in today's newspapers, that Brazil might teach Iraq to build the atomic bomb or transfer technology to it that would lead to that end.

"What in fact happened is that in replying to reporters' questions yesterday in the Foreign Ministry about the transfer of nuclear technology, at no time did he intend or in any way mean to refer to technology capable of leading to the building of nuclear weapons.

"In that regard, he wants to make it clear that Brazil does not possess nor does it plan to acquire or develop that type of technology. The country's activities in the field of nuclear energy, as is well known, are intended exclusively for peaceful purposes."

Recording

Despite the denial, at least nine witnesses clearly remember Gen Samuel Alves Correa's statements made to reporters the day before yesterday as he was leaving the office of Foreign Minister Ramiro Saraiva Guerreiro, with whom he had met for an hour and a half.

In addition, there is a recording of the interview, in the form of questions and answers from which the following passage was extracted:

[Question] Should Brazil continue to supply arms to Iraq?

[Answer] As Brazilian ambassador in Baghdad, I want to work for a tightening of relations. If Iraq wants to buy food, we should sell food; if its interest is services, we are going to supply services; if they want weapons, we will export arms. We must make every effort to reduce our trade deficit, which is very high because of oil supplies.

[Question] What if Iraq wants nuclear-sensitive technology?

[Answer] If there is interest on their part and the Brazilian Government agrees, why not? We must avail ourselves of all possibilities of exporting to Iraq. Last year, Brazil bought \$1.25 billion from Iraq and sold only \$150 million.

Sensitive technology in the nuclear area, as is known, refers to the techniques of enriching uranium, the reprocessing which Brazil is going to receive from the FRG as part of the nuclear agreement. Both countries have stated that these techniques will be used solely for peaceful purposes although they can be used to build atomic weapons.

Press Report

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 11 Jan 80 p 5

[Text] Brasilia--The new Brazilian ambassador to Iraq, Gen Samuel Alves Correa, admitted yesterday that Brazil could sell sensitive nuclear technology to Iraq. "If there is interest by the Iraqi Government in purchasing that type of technology and Brazil has the means to sell it, why not do it?" said the ambassador as he left the office of Foreign Minister Raimundo Saraiva Guerreiro, with whom he met for an hour and a half.

General Alves Correa believes that Brazil must export all the goods and services Iraq wants to buy. In his opinion, that is an opportunity the country should not waste: "If the Iraqi Government needs to import food, services, arms or nuclear technology, Brazil should avail itself of all those opportunities in an attempt to reduce the trade imbalance between the two countries, which is unfavorable for us because of the huge oil purchases."

The new ambassador believes that the interests of Brazil demand that we export the largest possible number of products "because it is very difficult to sustain a trade balance in which we purchase \$1.25 billion and sell only \$150 million."

He pointed out, however, that balancing that trade exchange does not depend only on the government "but also on the businessmen, who must use all their effort and determination to increase the supply of products that will increase our exports to Iraq."

"My main task as an ambassador," said Gen Samuel Alves Correa, "will be to facilitate to the maximum the contacts between the governments and business sectors to identify the concrete possibilities for all types of transactions, from primary and manufactured products to services, transfer of technology and knowhow, training of staffs, skilled workers and scientists."

The new ambassador arrived at the Foreign Ministry yesterday in his general's uniform but he explained that he will not wear a uniform in Iraq: "Since I am still serving as chief of staff of the armed forces, it is difficult to change clothes just to come to meet with Foreign Minister Saraiva Guerrreiro. However, after I transfer the position to my successor on 18 January, I will say good-bye to the uniform and leave for Baghdad the following day."

He said that he considers the presence of a Brazilian military attache in Iraq to be very useful. He pointed out, however, that "the subject is being studied by the government but a definite decision has not yet been taken in that regard."

Thus far there are no Brazilian military attaches in the Middle East but the general believes the increasing sales of arms to Arab countries justify the sending of representatives of the Brazilian Armed Forces.

With reference to negotiations regarding the Majnoon oil-bearing table where, according to some specialists "Brazil exchanged a future of promising exploration for immediate advantages," the new ambassador preferred not to comment: "I do not regard it as a matter within my purview." That was also the reason given by him in refusing to speak about the opening of a Palestine Liberation Organization (PLO) office in Brazil: "That matter is being examined by the Brazilian Government and a decision will be taken at the opportune moment."

CNEN Not Involved

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 9 Jan 80 p 6

[Text] The chairman of the National Nuclear Energy Commission (CNEN), Her-
vásio de Carvalho, declared in Rio yesterday that the CNEN did not participate in the negotiations for the nuclear cooperation agreement with Iraq and that the only information it could give has already been revealed by the Foreign Ministry. He said that only now, after the signing of the agreement, will all the provisions envisioned be detailed; then the CNEN will participate in discussions.

Among the provisions of the agreement revealed by the Foreign Ministry there is one that provides that the CNEN would be responsible for advising in the areas of reactor safety, and others that provide for the exchange of experiences on the use of the IAEA's international nuclear information system, the exchange of visits to research and development institutes and of scientific experiences, in addition to personnel training. However, it is

not yet known how Brazil will be able to transfer reactor construction technology inasmuch as it has not built any thus far. There is also no mention of time-frames or financial resources.

Negotiations After FRG Accord

Rio de Janeiro O GLOBO in Portuguese 10 Jan 80 p 24

[Text] Brasilia—Talks on atomic cooperation with Iraq began as soon as Brazil and Germany signed the nuclear agreement. That information was given yesterday by the Iraqi charge d'affaires, Talib Moubarak, commenting on the signing of the agreement between Brazil and Iraq last Saturday in Baghdad and announced this week by the Foreign Ministry.

According to the envoy, there will not be any alteration in the development of nuclear cooperation with Brazil because of the transfer of nuclear technology from France to Iraq under an agreement signed between the two countries.

"We want to diversify our sources of supply of nuclear technology, the same way that Brazil is seeking to diversify its oil supply sources, commented the charge d'affaires.

The political aspect of the agreement was also analyzed by the Iraqi diplomat, who denied any attempt on the part of his country to transfer Iraqi nuclear development bases to Brazil to escape the acts of sabotage common in Europe, where 3 years ago two reactors built by France were destroyed by terrorist groups before they were shipped to Baghdad.

"One thing has nothing to do with the other. At the time our reactors were destroyed, we were already engaged in talks with Brazil, Moubarak asserted.

The diplomat also denied that he had talked about the nuclear agreement with Planning Minister Delfim Netto at the meeting they held Tuesday. It was a courtesy visit and its purpose was to deliver a present from the Iraqi Government to the minister.

8711
CSO: 5100

ANGRA-3 SITE TO BE DETERMINED IN MARCH

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 11 Jan 80 p 20

[Text] Rio—The site of the third nuclear plan will not be determined until March, when the studies on reinforcement of the foundations of Angra-2 will also be concluded, the president of Furnas Electric Power Plants, Licinio Seabra, revealed in Rio yesterday. At the present time, some studies on grades are being carried out by the American companies Appolonia and LGA to determine the new site of Angra-3.

Seabra said that if there is no difference in cost for installation of the plant in Ponta Grande or Itaorninha, preference will be given to the site that does not require the driving of piles, although there is no reason to condemn that type of foundations inasmuch as technically the problems have been solved.

Budget

The president of Furnas revealed that the company has drawn up a budget envisaging investments in the order of 50 billion cruzeiros for 1980, still subject to cuts by the Electric Power Corporation (ELETROBRAS), the tendency of which is to cut it to about 40 billion cruzeiros. Furnas has not yet determined the investment to be made on the nuclear projects but it will be less than that made during the last 2 years, when it represented half of the company's budget.

Licinio Seabra considered the request of ELETROBRAS for 230 million [as published] cruzeiros at current prices insufficient to activate all of the projects envisaged. Thus, the subsidiaries of ELETROBRAS are still studying which projects can be postponed and where appropriations cuts may be made.

Angra-1

The hot tests at the Angra-1 nuclear plant will begin in March and, if there are no problems, the core of the reactor will be charged between May and June. The plant is expected to begin commercial operations in December but there may be a slight delay because there is no leeway in the timetable.

According to Licinio Seabra, the Brazilian Nuclear Corporation (NUCLEBRAS) is still discussing the recharging of the Angra-1 plant, which is scheduled to take place in early 1982. The first charge of enriched uranium was supplied by Westinghouse, the same company that built the reactor. The recharge is being negotiated with Urenco and the U. S. Energy Department. The pool located alongside the plant for cooling the spent fuel has a capacity of five charges, so there is still some time to solve the problem of the site of atomic waste or reprocessing.

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ANGRA-1 TO TEST WITH NUCLEAR FUEL BY MAY

Rio de Janeiro O GLOBO in Portuguese 16 Jan 80 p 17

[Text] Brasilia--The chairman of the National Nuclear Energy Commission (CNEN), Hervasio de Carvalho, announced yesterday that the Angra-1 nuclear plant will begin tests with nuclear fuel by next May, which will be increased gradually until reaching full operational capacity in January 1981.

He reported also that pressure tests are already being carried out at Angra-1 for the purpose of testing the resistance of the equipment. After these tests, Furnas will begin the tests with the nuclear fuel elements, initially with a small load, but it may be put on the transmission lines once certain technical adjustments are made, such as synchronizing the cycles.

Hervasio de Carvalho refuted the criticism that the Angra-1 timetable has been delayed, declaring, "all over the world, the minimum period for the construction of a plant is approximately 8 years." Work on the Angra-1 project began in 1972 and, according to the CNEN chairman, "those who talk about a delay are computing the time from the political decision to build the plant and not from the beginning of the work."

Hervasio de Carvalho reported that EME is concluding studies on the costs of piling for the Angra-2 nuclear plant, which will be presented to CNEN within the next few days. He revealed, however, that the solution proposed was the driving of new piles and reinforcement of the existing ones.

Hervasio de Carvalho said that the CNEN is already making its own estimates, which will be compared with the figures that will be supplied by EME. He asserted that only after the conclusion of these studies will work on Angra-2 be resumed.

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CSO: 5100

BRAZIL

BRIEFS

ITATAIA URANIUM EXPLOITATION--The Brazilian Nuclear Corporation (NUCLEBRAS) and the PETROBRAS Fertilizer Corporation (PETROFERTIL) signed a contract in Fortaleza today for technicoeconomic feasibility studies for the exploitation of the Itataia uranium deposit, associated with phosphate, which may culminate in the installation of a third uranium concentrate plant. The Itataia uranium reserves, including measured, indicated and inferred, amount to 122,500 tons, being the largest in Brazil. In addition, they are associated with phosphate, estimated at 13.4 million tons, to be exploited by PETROFERTIL. The Pocos de Caldas industrial complex will begin to produce uranium concentrate this year, with a capacity of 500 tons annually, thus taking care of the first recharges of Angra [as published] and first charge of Angra-3. In Figueiras, Parana, geological work has already been concluded to begin the exploitation of uranium and the installation of another concentrate plant. The uranium reserves in that region amount to 8,000 tons, 7,000 of which have already been measured and indicated.
[Text] [Sao Paulo O ESTADO DE SAO PAULO in Portuguese 11 Jan 80 p 20]

8711
CSO: 5100

NUCLEAR CENTER FOR TRAINING SCIENTISTS OFFERED

AB101930 Accra Domestic Service in English 1800 GMT 10 Jan 80 AB

[Text] Ghana has offered its nuclear center at Kwabenya near Accra as a regional training center for scientists in Africa. This was announced by the chairman of the management committee of the Ghana Atomic Energy Commission, Professor Allotey, at the 23rd session of the general conference of the International Atomic Energy Agency which has ended in New York.

Professor Allotey, who led the Ghana delegation, said the institute already has facilities for courses leading up to the masters level in radio-isotope applications in medicine, biology, food and agriculture, radiochemistry and physics. He expressed Ghana's concern at the alarming rate of increase in the agency's budget for this year. Professor Allotey hoped the high increase in the budget would be considered as an exception and called on the secretariat to be economical especially in travels, administrative services, operational costs and on (?safeguards).

He said as a result of discussions which his delegation held with the agency's deputy director general, the agency has agreed to offer 100,000 dollars worth of equipment to Ghana next year. In addition, training facilities worth 5,000 dollars will be provided for the staff of the Ghana Atomic Energy Commission and the three universities in Ghana.

CSO: 5100

NAMIBIA

BRIEFS

SWAPO: END URANIUM EXPORTS--South West African People's Organisation (SWAPO) representative's office in Bonn on December 11 called for pressure and trade union action to put an end to the exportation of Namibia's uranium by fascist South Africa to Britain, France and West Germany. In a communique released in London SWAPO stated that its wish was to draw attention to the significance of the fact that these three of the five Western contact group have been engaged in the negotiations with South Africa and SWAPO over the last years on the future of its territory and at the same time engaged in the theft of Namibian uranium. The communique added, "This again illustrates the complicity of the five with the fascist South African regime in its attempt to set up a client government in Namibia to serve their interests and their readiness to disregard UN resolutions and the findings of the international court of justice when it suits them to do so." [Text] [Lusaka THE ZIMBABWE PEOPLE'S VOICE in English 22 Dec 79 p 3]

CSO: 5100

INDUSTRY INFLUENCED BY ANTI-ZWENTENDORF PLEBISCITE

Zurich NEUE ZUERCHER ZEITUNG in German 10 Nov 79 p 17

[Text] One year after the plebiscite which forced the abandonment of the Zwentendorf nuclear plant and any type of nuclear energy utilization in Austria, the cost of this decision is gradually becoming apparent, at least in outlines. The national conglomerate and the nine regional utilities companies, as well as those of the cities of Graz, Innsbruck, Klagenfurt and Linz, have recently submitted their petitions for an increase in the price of electricity for the beginning of 1980 to the official price commission of the Ministry of Commerce. These contain elements of the nuclear cost complex to varying degrees, depending on the method of calculation chosen to compensate for the loss.

The conglomerate, the companies of which are either completely or predominantly state-owned, had already announced in May to what extent they would be affected by the Zwentendorf loss and the manner of transfer; now the reports by the seven regional companies which had participated in the Zwentendorf nuclear plant (Lower and Upper Austria, Steiermark, Kaernten, Salzburg, Tirol and Vorarlberg) have also been submitted. The American and Soviet partners to the contract for delivery of the nuclear material--the former for Zwentendorf, the latter for the second nuclear plant which had been planned, have finally submitted their calculation about the amount of transfer fees, should the Austrians break the contracts. In the former case it amounts to approximately 200 million schillings, in the latter case 225 million schillings.

Tug of War Over the Price of Electricity

The Austrian electric rates had last been increased in April 1978, by an average of 4.4 percent, predominantly for the price per kilowatt hour. Since then the base prices for private households have ranged from 9.90 schillings (Tirol) to 30.10 schillings (Burgenland), for commercial accounts from 17.57 schillings (Tirol) to 43.34 schillings (Steiermark), and the price per kilowatt hour, which is the same for all consumers, ranges from 73.8 (Tirol to 97.8 groschen (Salzburg). The 1978 price increase had been granted

to the utility companies with the express condition that no further increases would occur until the end of 1979. This condition, which was meant to "smooth over" price increases, has proved to be a boomerang. Two wage disputes, constantly increasing costs for the construction of nuclear plants and transfer installations, but above all inflated prices for heating oil and natural gas at present will put stronger pressure on tariff increases than had been customary in the past.

The conglomerate took the initiative by supplying the price commission with calculations in an effort to justify a 20.3-percent rate increase. The requests by regional public service companies vary, according to the percentage electricity in the total amount of power delivered, between 13.1 percent (Vorarlberg) and 26.6 percent (Graz), with Upper Austria (19.39 percent), Lower Austria (22.5 percent) and Vienna (23.67 percent) practically in the middle range. Tirol has said that 30 percent is necessary, but will be content with 23.3 percent. The cost of the anti-Zwentendorf vote is only indirectly part of the request by the conglomerate. The conglomerate has already written off its half of the construction costs and capital investment in the nuclear plant without suffering any loss, therefore also without direct effects on the tariff request. Apparently the only costs calculated in the petition are the costs for the foreign materials--increased because of loss of own capital and of replacement for Zwentendorf (imported power, conventional calorific capacities). These elements, as well as other cost increases since April 1978, are also contained in the tariff requests by the regional utility companies.

High Amortizations

The requests by the seven regional companies which, together, hold the second half of shares in the power plant, also consider parts of the direct cost of the Zwentendorf sacrifice. In contrast to the conglomerate, these seven firms have included in their 1978 budgets current extraordinary partial amortizations of their contributions made to the construction costs, with the result that the claims were reduced in several cases to 30 percent, in two cases to 40 percent of the purchase price. The amortizations for the seven companies amount to a total of 1.157 million schillings; in addition, deferrals for not yet demanded and not yet calculated construction cost allowances have been estimated to total approximately 650 million schillings. The direct total loss suffered by the seven companies resulting from the loss of capital invested in Zwentendorf would then amount to approximately 1.8 billion schillings for the fiscal year 1978 alone. This would correspond to more than half (57 percent) of the sum of the joint capital of the seven firms, whereby the values fluctuate between 39 percent in the most favorable case to 100 percent or 140 percent in the two least favorable cases.

In individual cases, in addition to the construction cost allowances, amortizations were written on the corporate capital of the GKT nuclear corporation. At the end of 1978, in addition to the 300 million schillings of corporate capital, a total of approximately 5 billion schillings in construction costs, in proportion to shareholder participation, were paid in. Additional requests of an estimated 1 billion schillings must be expected by the end of 1979. But the capital investment is not contained in the total loss mentioned above, because the seven regional utility companies account for this under-current interest payment and do not--like the conglomerate, make inventory. With the exception of the Salzburg SAVE, which produces only a small part of its electricity itself, the regional utility firms involved in the nuclear plant all show high annual losses because of special amortizations and deferrals, which add up to 1,876 million schillings--almost 60 percent of the total capital shares.

Index Worries of the Government

The minister of commerce, who is both the government's energy politician and the head of the official price commission, declared at once that he would not permit the regional utility companies to include the Zwentendorf losses in their tariff calculations: neither the consumer nor the state will pay for the nuclear plant, "But instead the energy industry, which had made this giant mistake." The minister, whose opinion is shared by the chancellor and vice chancellor, justified this somewhat contrary-to-fact explanation with the statement that the energy industry itself is responsible for the failure of the project, because it had not been able to cope with "energy shortages and other problems" (among them education of the public). Now, if need be, they would have to resort to reserves. Therefore, it would not come to the kind of rate hikes desired by the companies, and any rate hike which could be justified by the economy will certainly be under 20 percent.

The minister uses a tactic which is customary in all cases of necessary changes of state regulated prices and tariffs and is primarily the result of an effort to have enterprises absorb the effect of cost and price changes in the economy and to minimize the effect on the consumer price index as much as possible. In this specific case there is apparently also an effort underway to reinterpret preliminary debates about the Austrian nuclear plant in order to get the responsible politicians off the hook.

In connection with the requests by the American and Soviet suppliers for transfer fees, the maneuver could prove to be counterproductive, in the opinion of leading energy economists. The GKT nuclear power company and its shareholders attempt to fight these demands with the explanation that compliance with the terms of the contract had been made impossible for them by a "higher power"--referring to the plebiscite and the antinuclear law. The assertion by the minister of commerce and the government, that it had been

a misapplied investment is, in the opinion of the companies, likely to make their argument obsolete and renders any effort to win at international arbitration futile; this would even increase total losses suffered, especially since there will be additional losses for the second nuclear corporation GKS and the nuclear planning company, both in liquidation.

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CSO: 5100

AUSTRIA

NUCLEAR POWER CONTROVERSY OVER ZWENTENDORF GROWS

AU160015 Vienna DIE PRESSE in German 15 Jan 80 p 4 AU

[Special report: "Zwentendorf Supporters Speak of Begging Trips to Moscow"]

[Text] One day after Austrian Trade Union Federation Chairman Benya's conservative statement on Zwentendorf [Austria's mothballed and only nuclear power plant] in his TV interview on Sunday [13 January], both supporters and opponents of nuclear power became very active yesterday. The "Citizens' Initiative for Abolishing the Law Against Nuclear Power Production" again appealed for support of its planned referendum and spoke of begging trips as far as Moscow by Austrian power companies [Federal Power Company Director General Walter Preimth is scheduled to start talks in Moscow this week on a power link between Austria and the CEMA grid]. The nuclear power opponents criticized Benya's remark on the 1979 Harrisburg reactor accident.

"What Austrian nuclear power opponents are doing at present borders on terrorizing public opinion," a spokesman of the Zwentendorf supporters declared. "Apparently in appreciation of the support rendered them earlier by FRG antinuclear power activists they now openly threaten FRG power companies with demonstrations against a nuclear power plant that is to be built close to the Austrian border." The spokesman called it noteworthy that there are no similar intentions regarding any demonstrations against the CSSR and Hungary. However, Austria is dependent on power imports from the FRG, he said, and "anyone can work out for himself how much power the Germans will supply us if Austria exports the Zwentendorf hysteria."

The nuclear power opponents, on the other hand, are excited over Benya's statement that fortunately no harm was done in Harrisburg. They argue that such minimizing is "coming close to being criminal."

CSO: 5100

BELGIUM

NUCLEAR ENERGY POLICY, PROSPECTS EXAMINED

Paris REVUE GENERALE NUCLEAIRE in French No 5, Sep-Oct 79 pp 478-485

[Article by R. van den Damme, professor at the University of Brussels, director of Electobel and Intercom]

[Text] The author emphasizes the extreme dependence of Belgium in the matter of its energy supply. This situation has led it to diversify its sources of supply and, in particular, to develop nuclear energy. The author presents the broad outlines of the program to provide the country with nuclear energy, called "the essential tool in any coherent energy policy."

Belgium today is characterized by almost complete (nearly 90 percent) dependence upon foreign sources for its energy supply; its only domestic source, coal, is unfortunately not capable of significant growth over the medium term. Under such conditions the only feasible policy consists of maximum diversification of our sources of supply so as to minimize the consequences of our dependence, lacking the ability to reduce it.

Such a policy has always been applied by the producers of electrical energy. Not content with exploiting a whole range of energy materials, a large number of them cheap, they are continually seeking new economically available energy sources. Yesterday petroleum and natural gas, today nuclear energy. Moreover, considering its advantages from the consumer's point of view electricity represents a favored energy means and an essential element in any coherent policy for rational utilization of energy.

For more than 15 years Belgium has pursued a moderate program for introducing nuclear energy into the overall energy balance sheet, aimed at covering half the consumption of electricity by this means, starting in 1985, and which represents 13 to 15 percent of the total energy demand.

As far as supply of nuclear fuel is concerned, even though Belgium has no exploitable uranium deposits it has succeeded up to the present in assuring itself a relatively favorable position in the principal stages of the fuel cycle.

Associated from the beginning with the development of the American PWR [pressurized water reactor] system, Belgium is also preparing for the future by its participation in German and French breeder reactor development programs.

I. Belgium's Energy Dependence

Compared with the other great industrial entities Western Europe is characterized by market dependence upon foreign sources as far as its energy supply is concerned. While the United States imports only about 20 percent of its energy supply and the USSR is still an exporter, the EEC, for its part, is obliged to import nearly 60 percent of its requirements.

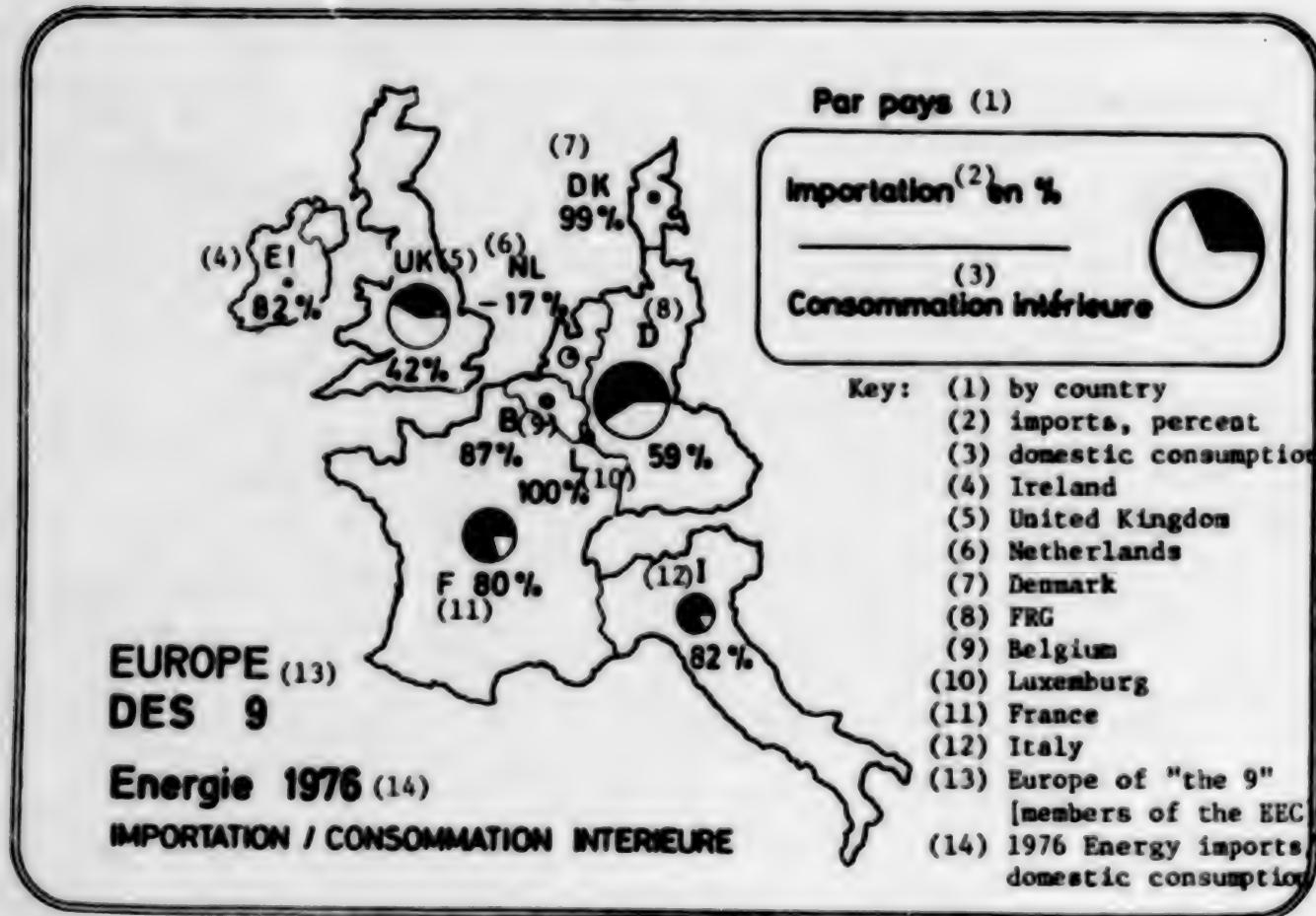
The situation of Belgium in all respects seems even more disturbing.

That country's development since the 19th century was based upon coal.

After having been one of the foremost coal producers of Western Europe Belgium has experienced decline in its production and the closing of mines because of exhaustion and unprofitability so that today it is reduced to importing more than half of its coal consumption.

As for its total energy consumption Belgium is now importing nearly 90 percent of its requirements. The map, Figure 1, shows that within the EEC we are among the most unfavorably situated countries.

Figure 1



Looking to the future the prospects are hardly encouraging over the short and medium term.

First of all, demand does not seem to be near saturation, and continues to grow regularly in those sectors which are not greatly affected by the economic crisis.

As for the possibilities of increasing its domestic resources, it must be recognized that Belgium is irreparably devoid of natural gas, petroleum (even off-shore), and uranium. In the case of coal, of which Belgium has large available reserves--at great depths, alas!--exclusive recourse to conventional extraction techniques will not permit the present level of production to be appreciably exceeded. That is why Belgium, in cooperation with Germany, is taking the lead in research into underground gasification under pressure at great depth. It is now a matter of a technological gamble certainly carrying high hopes but today nobody can say what its future contribution to our energy balance sheet will be.

In a more futuristic perspective, there is not much to be expected of energy from the sea or the wind; as for solar energy and fusion energy, they will be able to make a positive contribution only during the 21st century.

In an energy-hungry world, in which control of energy sources is later going to be, more and more, the object of struggles, on the economic level as well as the political level, the only possible strategy for a country such as Belgium consequently is to diversify to the maximum its sources of supply and lacking the power to reduce its dependence, at least minimize its consequences.

II. Energy Policy of Electricity Producers

One of the results of the worldwide energy crisis is the obligation of most of the industrial countries, even those whose economic systems is the freest, to adopt a national energy policy. Belgium has not escaped the general trend. The electrical energy sector*, which for its part transforms a quarter of the primary energy in Belgium, has not waited for recent events in order to put into practice a coherent energy policy and has always set about to manage energy resources as prudent administrators.

The far-reaching concepts of the policy pursued by the electricity producers are the following:

diversification;
mastery of new energy sources;
increasing the prices paid for cheap materials; and
multipurpose-adaptation to fuel markets.

*In Belgium 97 percent of electricity production depends upon private enterprise.

The concern for diversification and exploitation of all available energy sources is illustrated in Figure 2, which shows the evolution of the relative parts played by the various primary energy sources in production of electricity from 1960 to date. There one may distinguish the successive break-throughs of petroleum from Arab countries, natural gas from the Netherlands, and last, nuclear energy.

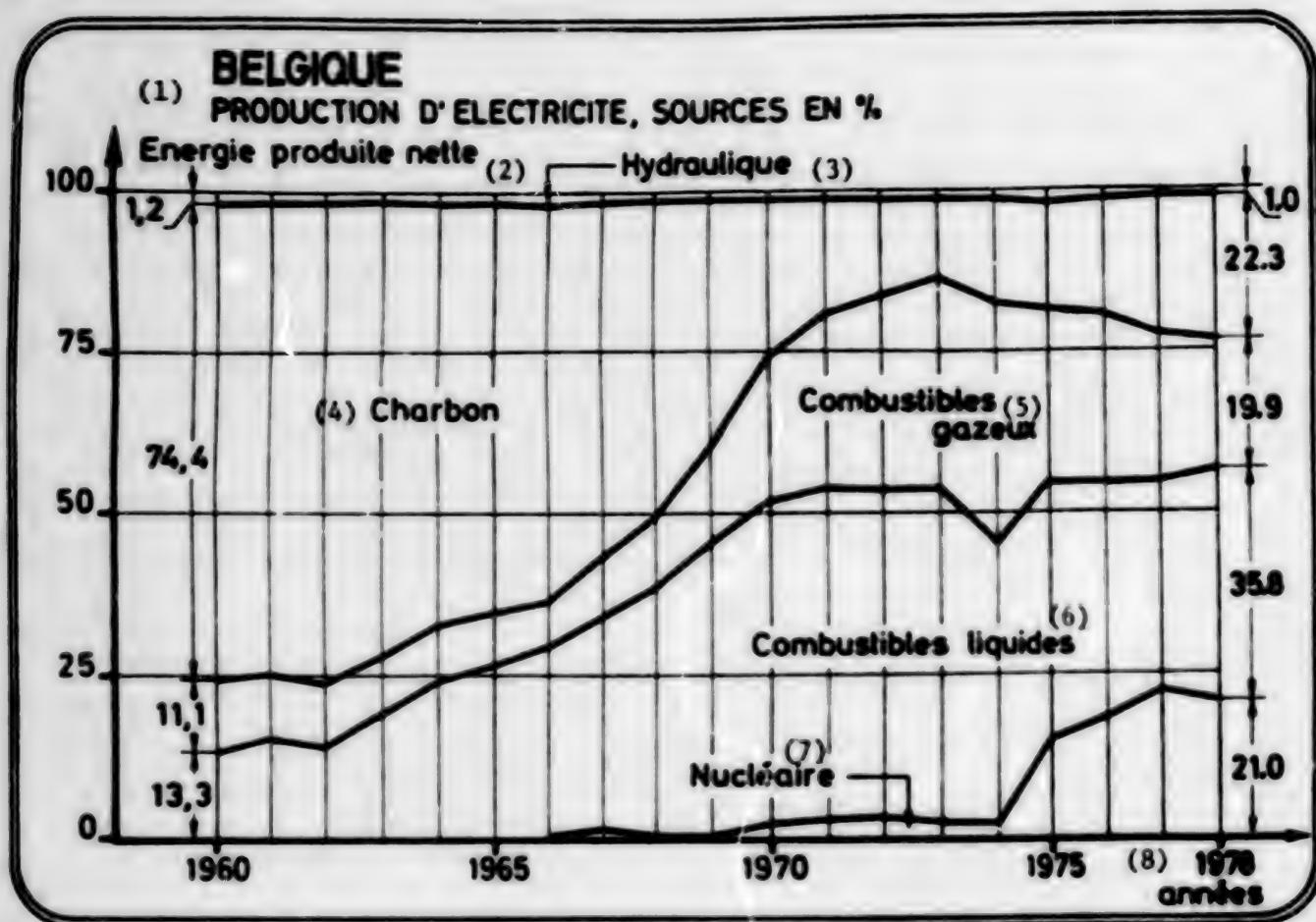


Figure 2. Belgium: part played by the various energy sources in electricity production

Key:

1. Electricity production in Belgium: primary sources in percent
2. net energy production
3. hydraulic
4. coal
5. gaseous fuels
6. liquid fuels
7. nuclear
8. years

That diagram also reveals the remarkable flexibility of adaptation which has been proved in our ensemble of thermal power stations when faced with the petroleum crisis of 1973-1974. Irrespective of the important role played by nuclear energy (programmed well before the crisis), there will be noted the return of coal in force, made possible by the existence of multipurpose power stations (half of all the stations can burn two or three different fuels); this trend will be further accentuated in the near future by conversion to coal of three oil-burning units of 125 megawatts.

Although electrical energy provides a large number of attractive characteristics at the level of the general economy its advantages for the consumer are also well known: flexibility, cleanliness, efficiency, and capability of being automatically controlled. These qualities are causing, in Belgium as elsewhere, the rate of electrification of the energy demand to increase continually, and this, despite the still relatively high price of this energy source.

The foregoing considerations indicate that electricity constitutes, more than ever, a favored energy vehicle. Its harmonious development must be considered the essential tool in any rational policy of energy utilization.

III. Electrical Energy in Belgium

Since the beginnings of its development consumption of electrical energy on average has doubled every 10 years, a phenomenon observed in all industrialized countries, so much so that it can be called a "law."

On occasion there can occur interruptions of the growth rate due to economic conditions, as was the case in 1974-1975, but on the whole no abrupt stopping of growth in demand can be foreseen (Figure 3). However, the most recent projections contemplate an annual growth rate of 5 percent rather than the 7 percent observed in the past.

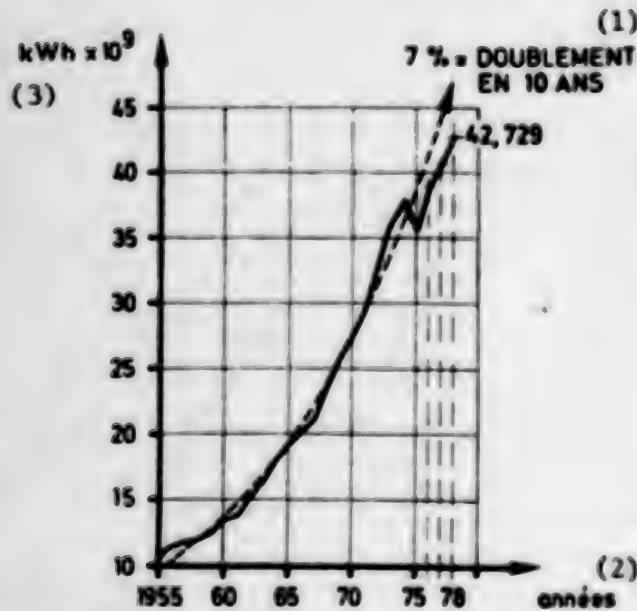


Figure 3. Belgium: Growth of electricity consumption

Key:

1. 7% is equivalent to doubling in 10 years
2. years
3. 10⁹ kilowatt-hours

In 1978 net consumption in Belgium amounted to 43,000 GWh [gigawatt-hours] with peak demand of 7,700 MW [megawatts]. To meet that Belgium has installed capacity of 10,000 MW, in which the largest units develop 870 MW (Tihange 1, nuclear), 392 MW (Doel 1 and 2, nuclear), and 280 MW (seven conventional units), with the ensemble interconnected by a power network of 380 KV [kilovolts], which in turn is connected with adjacent countries.

These international linkages, as well as mutual assistance agreements concluded with our powerful neighbors (France in particular) have enabled Belgium to install units of large size without enormous ratio of reserve capacity.

Aside from the purely production stations a pumped storage station of 396 MW* makes it possible, by use of the energy stored during off-peak hours of the day, to cover peak consumption demands inexpensively.

IV. The Role of Nuclear Energy

A. Installation Program

Faced with the rapid rise in the prices of fossile fuels and the risk of their exhaustion over the medium term, the great majority of countries, no matter how little industrialized, are undertaking more or less ambitious nuclear programs, and that is in direct ratio to the severity of their respective degrees of energy dependence (Figure 4). Belgium, for its part, has been pursuing a program for 15 years, depicted up to 1985 in Figure 5 and Table 1.

Table 1 - The Nuclear Electric Program

Year placed in service	Unit	Net capacity (MW)
1962	BR-3	11
1966	Chooz (French-Belgian)	310
1974	Doel 1	392
1975	Tihange 1 (Belgian-French)	870
1975	Doel 2	392
1981	Doel 3	900
1981	Tihange 2	900
1983	Doel 4	900
1983	Tihange 3	900

*This installation will be expanded to 936 MW in 1979 (Second phase).

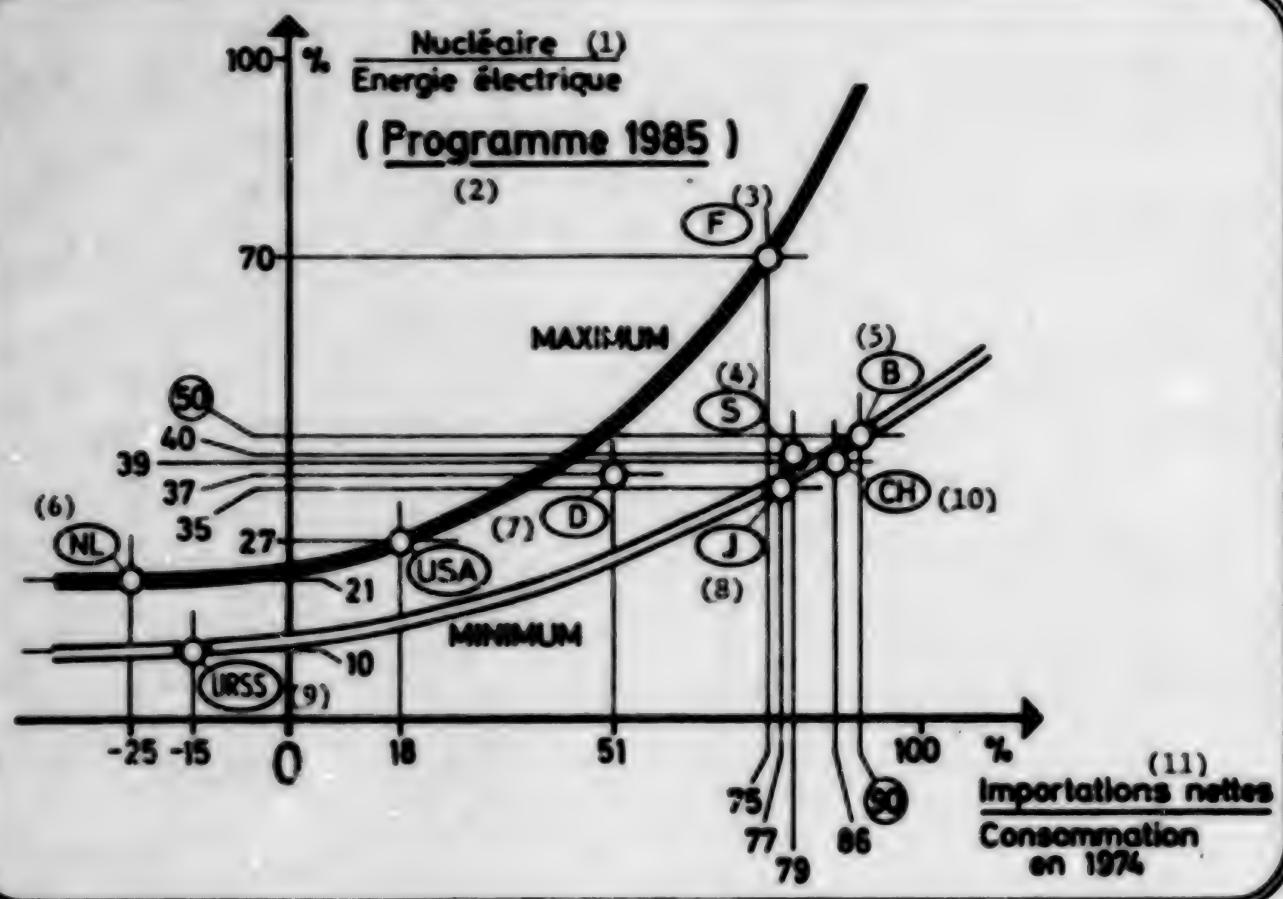


Figure 4. Energy dependence and nuclear programs of several industrialized countries

Key:

1. Nuclear electrical energy
2. 1985 program
3. France
4. Sweden
5. Belgium
6. Netherlands
7. Federal Republic of Germany
8. Japan
9. USSR
10. China
11. Net imports/ consumption in 1974

BELGIQUE - Energie électrique (1)

PRODUCTION NUCLEAIRE (2)

PRODUCTION TOTALE (3)

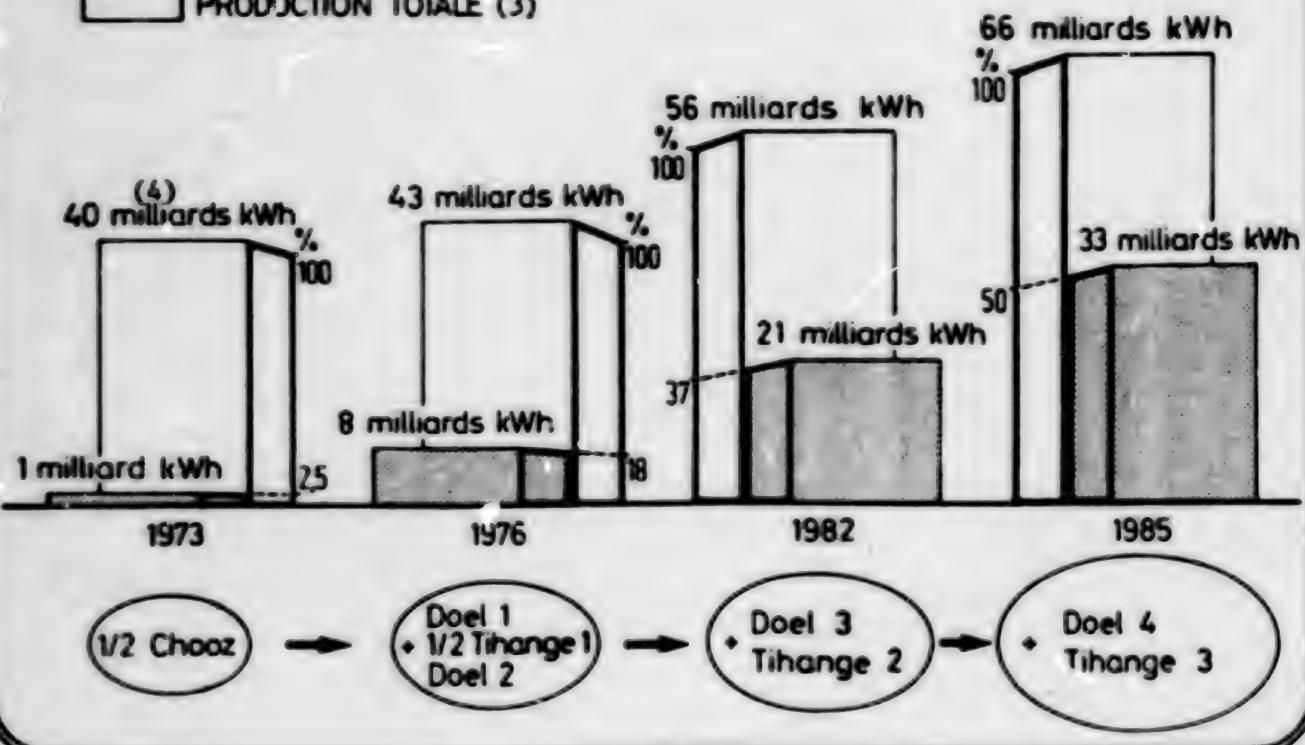


Figure 5. Belgium: Nuclear program and electricity production

Key:

1. Belgium - electrical energy
2. nuclear production
3. total production
4. 40 billion kilowatt-hours (and so forth)

The objective of this program is to cover 50 percent of the consumption of electricity in 1985 with nuclear energy, thus following the directives laid down in 1974 by the EEC, the urgency of which was again brought to mind at the meeting of heads of state in Paris. It must be remarked that even at that stage nuclear energy will cover only from 13 to 15 percent of the total energy demand (Figure 6). This limited objective implies that about two-thirds of the installed capacity will still consist of conventional units.

BELGIQUE - Consommation intérieure brute d'énergie primaire.⁽¹⁾
Parts de l'énergie électrique et de l'énergie nucléaire. ⁽²⁾

LEGENDE

- Consommation totale (3)
- Centrales électriques (4)
- Centrales nucléaires (5)

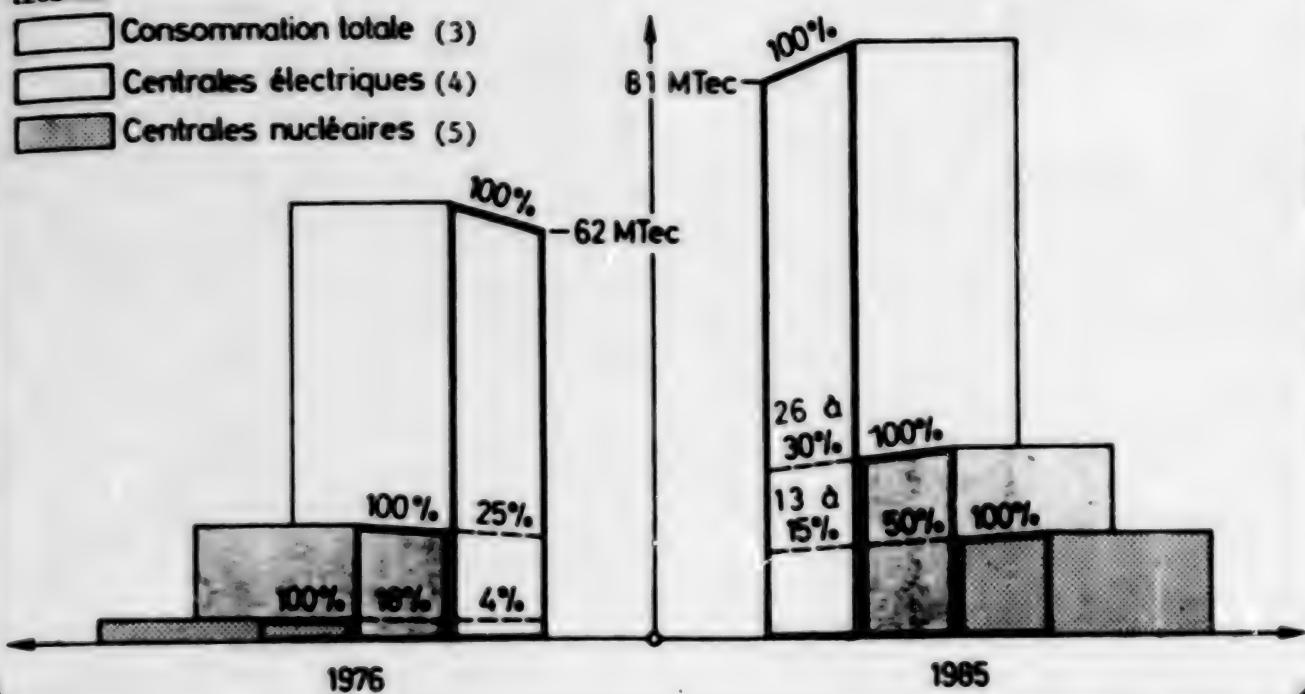


Figure 6. Belgium: Electricity and nuclear energy fractions in consumption of primary energy

Key:

1. Belgium: Domestic consumption of raw primary energy
Electrical energy and nuclear energy fractions
2. legend
3. total consumption
4. electric stations
5. nuclear stations

The map, Figure 7, shows the sites selected for the large nuclear stations now existing and under construction as well as the interconnecting network.

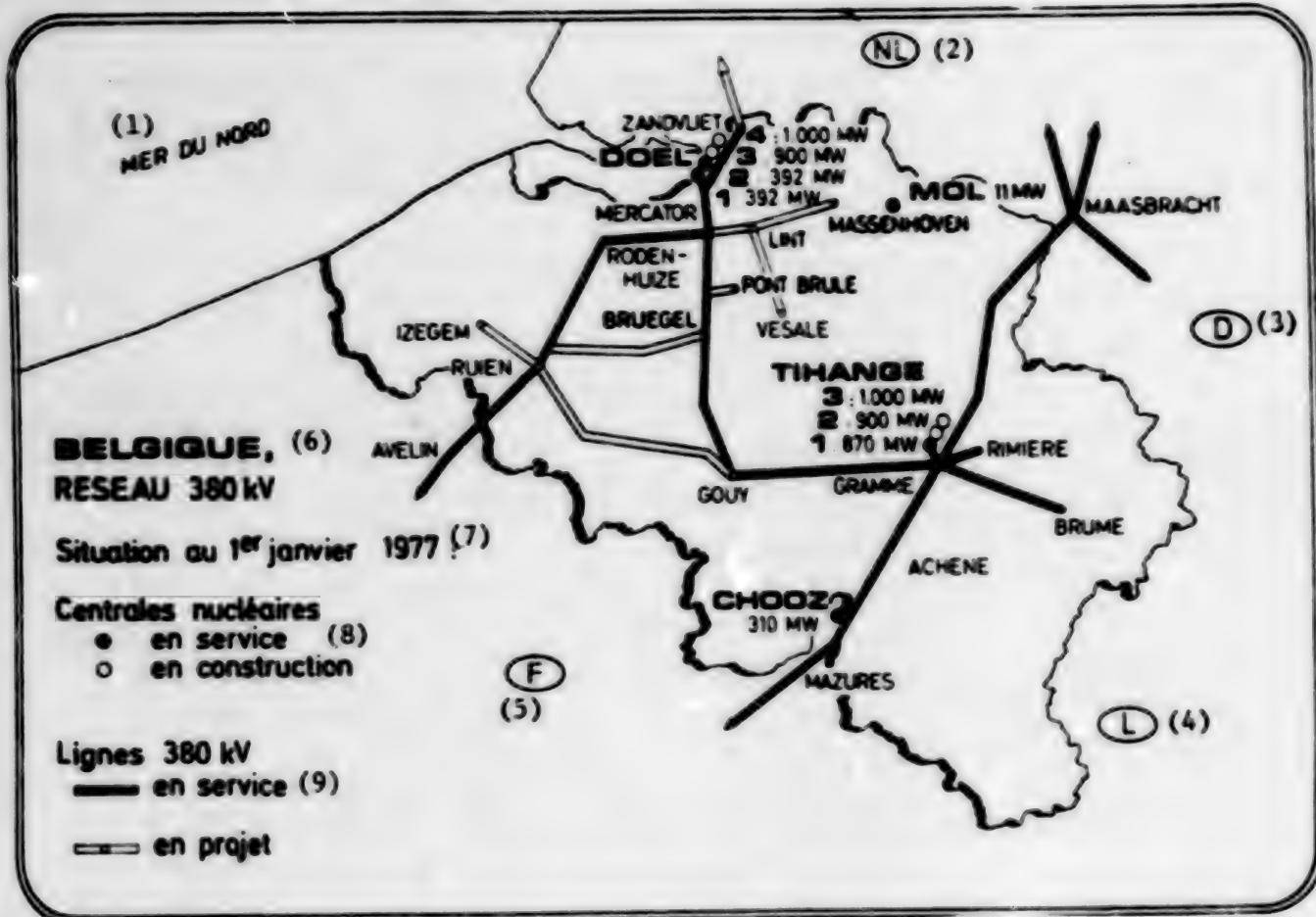


Figure 7. Belgium: Nuclear stations and interconnecting network

Key:

1. North Sea
2. Netherlands
3. Federal Republic of Germany
4. Luxemburg
5. France
6. Belgium: 380-kilovolt network
7. Status as of 1 January 1977
8. nuclear stations
9. 380-kilovolt transmission lines

- in service
- under construction
- in service
- projected

Beyond this program decisions depend upon the future energy policy of the Belgian government, which must shortly be the subject of discussions in the Parliament.

B. French-Belgian Cooperation

For many years there has been close cooperation between the French Electric [Power] Company and the Belgian producers of electricity. Already in 1958 they were joined together in SENA (French-Belgian Nuclear Electricity Company of the Ardennes), organized under French law, for the purpose of studying, constructing, and operating the Chooz PWR station, located near Givet in the Department of Ardennes. The participants were again joined in SEMO (Belgian-French Nuclear Energy Company of the Meuse), organized under Belgian law, with the new purpose of constructing Tihange 1.

In both cases France and Belgium are equally dividing the costs of operation and the energy produced. These joint constructions are of exemplary character in the highly equitable manner in which each country has derived its share of economic advantage and technological experience in return for its contribution of investment and "gray matter."

C. Economic Balance Sheet

For Belgium the introduction of nuclear energy into the overall energy balance sheet provides important advantages from the standpoints of costs, security of supply, and the fight against atmosphere pollution.

As for costs, estimates made for the year 1985 permit cost price comparison between a KWh [kilowatt-hour] of nuclear origin with a KWh produced in an oil burning station. It appears that the nuclear KWh is distinctly less expensive even if it is assumed that the cost of nuclear fuel will double. But the make-ups of these two production costs are greatly different (Figure 8):

in the case of the oil KWh, two-thirds of the production costs go abroad, principally to the OPEC members for purchase of crude petroleum which represents the major portion of the cost; and

in the case of the nuclear KWh, in contrast, the major part of the production cost is represented by the construction of the power station itself. But in such investment nearly 90 percent remains in Belgium and provides work for our factories. Construction of a nuclear power plant of 1,000 Mw capacity engages 2,500 persons for 5 years.

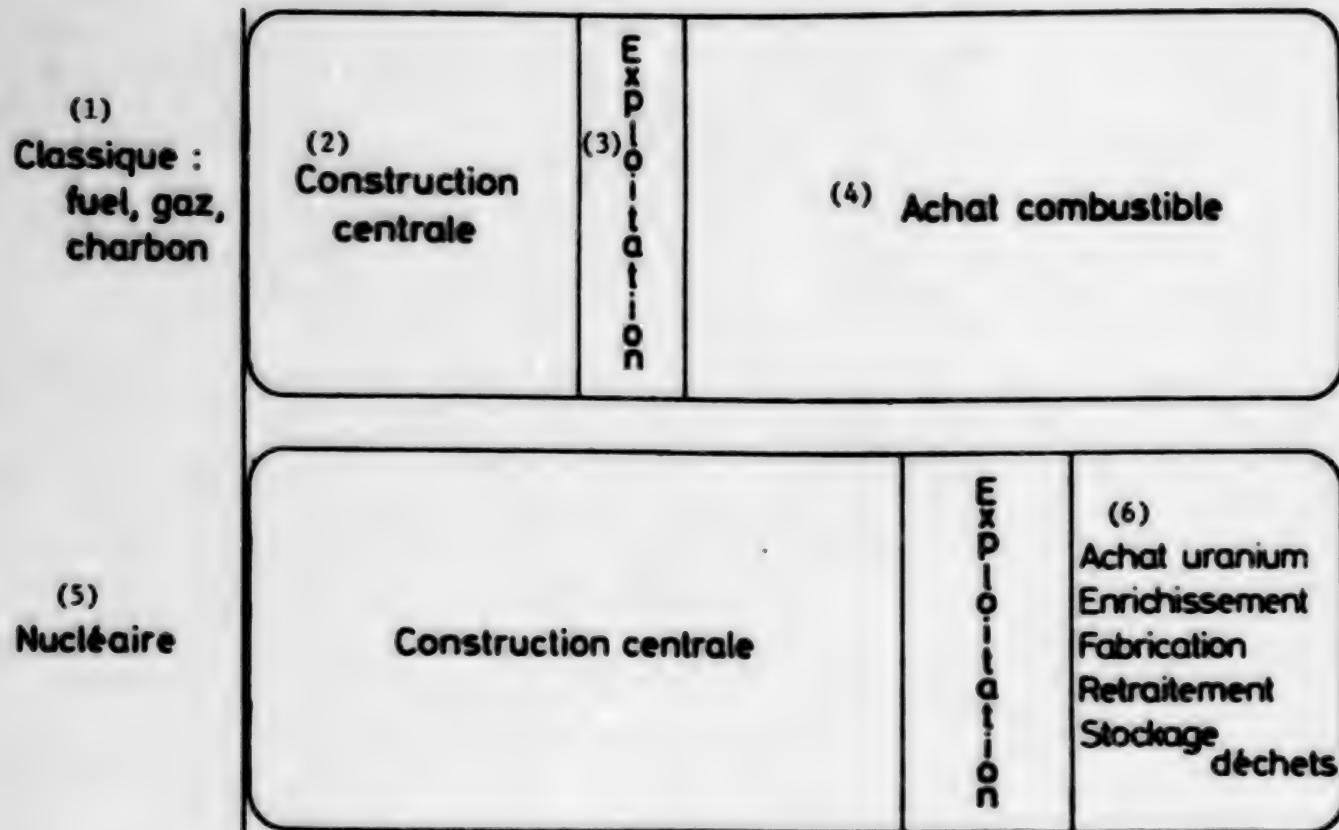


Figure 8. Belgium: Make-up of costs of a kilowatt-hour

Key:

1. Conventional: oil, gas coal
2. Power station construction
3. operation
4. fuel purchases
5. nuclear
6. uranium purchases
enrichment
manufacture
reprocessing
storage of waste products

Besides the cost advantage there is indeed another in favor of the nuclear KWh, a considerable advantage inherent in the nature of the costs, since nuclear energy promotes employment and eases our balance of payments situation.

D. The Fuel Cycle

As far as nuclear fuel supply is concerned, even though our country has no economically exploitable uranium deposits it has up to now succeeded in assuring for itself a relatively favorable position in the principal stages of the fuel cycle.

Our supply of natural uranium during the next few years is assured by virtue of contracts which in large part had been negotiated before the petroleum crisis. This uranium will come from the United States, Canada, and various African countries, Australia not yet having opened her gates to export. It is to be observed that the geopolitical orientation of these suppliers is totally different from that of the petroleum producers.

In the area of enrichment our needs are guaranteed by very long term contracts with the United States and with EURODIF [European Diffusion Agency], in which Belgium has an 11.11-percent stock ownership interest, and over less long term with the USSR and France (COGEMA [expansion unknown]).

In addition Belgium has within its own borders, at Dressel, a plant for manufacture of uranium oxide fuel assemblies, whose capacity of 200 tons of uranium annually will shortly be doubled, and a plant for manufacture of plutonium fuel assemblies whose references are among the best in the world.

Last, in the area of reprocessing the Belgian government and electricity producers decided to purchase the existing installations of EUROCHEMIC [expansion unknown] at Dressel and adapt them so as to have, in 1985, reprocessing capacity of about 60 tons of uranium annually, which is equivalent to the requirements of two 900-MW stations and one station such as Doel 1 or 2. The rest of our requirements will have to be either reprocessed by others, or stored in whole or in part until Belgium has sufficient reprocessing capacity available.

Aside from economic considerations, electricity production from nuclear energy offers the advantage of being far less polluting than production from fossil fuels. This factor weighs not negligibly in a country of small territorial extent and whose population density is one of the highest in the world, leading to inevitable proximity of electrical power plants to inhabited regions.

E. The Future

Because of its [small] size Belgium has never had either the ambition or the means to conduct its own research looking to development of its own national reactor type or system. On the contrary it has for long sought to be associated with large foreign programs, which in the 1950 decade led it to take close interest in the development of the American pressurized water reactors. The whole of the Belgium nuclear program today still reposes upon that system. For the future, Belgium is participating in European breeder reactor programs, principally the SNR-300 under construction at Kalkar in the Federal Republic of Germany (15 percent), and, to a lesser extent, the French Super-Phenix (2.4 percent).

As everyone concurs in the belief that the future of energy by fission lies with breeder reactors it can be seen that here, again, Belgium has given itself the best chance of being able to profit from this new energy source as soon as it proves to be economically exploitable.

V. Conclusion

Faced with ceaselessly growing energy needs and not being able to count upon sufficient resources of its own, Belgium has no other choice then to diversify and increase its supply sources.

Electrical energy can be produced from the most varied primary sources and up to now constitutes the sole means of exploiting the most promising of them--nuclear energy. These characteristics make it the essential tool in any coherent energy policy.

In the coming decades Belgium will have to struggle to prevent its energy dependence from becoming a shackle upon its economic and social progress. All evidence leads to the belief that in this struggle electricity from nuclear energy will be the spearhead.

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BELGIUM

DEBATES ON PATRIOT, HELIP ACQUISITION CONTINUING

Brussels KNACK in Dutch 19 Dec 79 pp 37-38

[Article by Frank de Moor: "After the Cruise Missile, a New Purchase: the Patriot Already To Replace the HELIP"; passages enclosed in slantlines, printed in italics]

[Text] In recent weeks a great deal has been said about the new American missiles equipped with nuclear warheads. In the meantime, not a word is said about the Nike-Hercules anti-aircraft missiles, of which the modernization and replacement by the Patriot is practically a foregone conclusion. This transaction threatens to cost Belgium nearly 30 billion francs, even though this time NATO advised the Air Force against spending a single cent for it.

If lessons for the future are to be drawn from the controversy over the deployment of the new American missiles equipped with nuclear warheads, then they surely are the following.

By the time the politicians must make a decision on the production and establishment of a new weapons system, the defense experts and their colleagues in industry have already made so many practical decisions concerning the development and military mission of this weapons system that it would be very difficult for the politicians to go back on those decisions. This means that so-called technical decisions, which are made by experts in one or two departments, are in fact of general political importance but escape any political control.

When the debate finally did get under way, it was suddenly noted in October 1979 that, for example, with regard to the deployment of 48 /cruise missiles/ of the /Tomahawk/ type in Belgium, the purchasing services of the American army had already recommended the development of the Tomahawk in January 1977 within the framework of the /Defense Systems Acquisition Review Council/, and that a few months later Belgium, among others, participated in a NATO study group which was already studying the consequences of the deployment of the Tomahawks in Europe.

A second important lesson to be drawn from the recent debate is the fact that when, in January 1977, the /Defense Systems Acquisition Review Council/ directed the American airplane manufacturer /General Dynamics/ to build the Tomahawk, it not only involved the surface target version, to be launched either from the sea or from the air, but that the decision also related to the model which would be used as ground launched missile by the American /air force/.

This means that already at that time, the technicians had opted for the deployment of a number of /ground launched cruise missiles/ in Europe and that they assigned these unmanned missiles to the /air force/ and not to the /army/: even though it concerned ground launched surface target missiles.

Needless to say, the rivalry between the various armed forces, the /inter-service weapons rivalry/, also played a role here and henceforth this aspect of the arms race will have to be followed more closely: to the extent that in the final analysis this rivalry, together with the decisions made by the experts, puts the politicians before a series of faits accomplis.

Such a fait accompli has been in the making in Belgium since March 1978 with nobody being any the wiser. It involves the /Nike-Hercules/ air target missiles and their replacement by the /Patriot/ -- all in all, a purchase of some /30 billion francs/ for 8 firing units, which for once were not even requested by NATO. All of this is possible in our country because the air force does not want to give up certain NATO missions to the army.

The North Atlantic Treaty Organization keeps a permanent defense chain in readiness in Central Europe against possible air attacks. This air defense chain consists of fighter planes as well as anti-aircraft systems, such as the HELIP and the Nike missiles.

The HELIP, the improved version of the /Hawk/ -- which was purchased for the Belgian army (4.5 billion francs) on 22 January 1979 over the strong protest of the BSP [Belgian Socialist Party] -- is supposed to shoot low flying enemy planes to pieces. The /Nike-Hercules/, which on the other hand is in the hands of the Belgian air force, together with the F-104 fighter planes -- and soon also the F-16 -- should bring down the enemy at a high altitude.

Aside from the Belgian air force, Denmark, Norway, the Federal Republic of Germany, the Netherlands, Italy, Greece and Turkey also have Nike missiles within NATO context.

In this way, NATO has a total of dozens of Nike batteries, each with approximately 20 launching pads, at its disposal. The Belgian air force has 8 of these batteries. All of them are located on German territory and keep part of the 3500 Belgian air force personnel in the RSD [expansion unknown] busy day and night.

The Nike is a complicated vehicle, of which the corresponding radar apparatus is essential. The whole weapons systems stands or falls on it.

But, while at the beginning of 1978 the Flemish socialists -- primarily for budgetary reasons -- suddenly began to object to the modernization of its Hawk batteries and the implementation of the /Hawk European Light Improvement Program/ (HELIP), a few Walloon socialists were initiating a program which would be much more important for the air force and for ACEC [expansion unknown].

At that time, and within a limited circle, assiduous efforts were being made in favor of the replacement of the Nike-Hercules; to the extent that in February 1978, it was even suggested in this newspaper, that one should wait with the /HELIP/ as the /Patriot/ -- which is also built by the American /Raytheon/ company -- would be ready in the mid-eighties to replace both the HELIP and the Nike.

As a matter of fact, at that time spokesmen for Raytheon assured us that by 1985 the Patriot would already be put into service by the American army. On the other hand, the Department of Defense continued to maintain that the European NATO countries should not replace their HELIPs prior to 1992, so that an expenditure of 4.5 billion francs for a weapons system which could serve for about 10 years did not even seem exaggerated. Consequently, on 22 January 1979 the government decided -- in spite of the Flemish socialists -- to bring the Belgian Hawk air target missiles up to the mark, electronically anyway. There was no longer any talk of the /Patriot/. Mistakenly, as it turns out, because practically immediately afterwards a decision was made, in profound secrecy, also to modernize the Nike-Hercules missiles in order to keep them in service until the end of the eighties. This /1 billion franc/ program would never have been noticed if it had not, in hindsight, been part of a broader plan. In and of itself, this program was not even all that bad to the extent that both the air force and the electronic industry (ACEC and MLE [expansion unknown]) would once again profit by it. The fact is that the NATO and Warsaw Pact countries will not stop trying to outdo each other with all kinds of attack and defense techniques, which constantly need to be improved and replaced to the large profit of the weapons industry.

Ports

Thus, at the end of the fifties, the /Nike Ajax/ had to be replaced by the /Nike Hercules/, which in turn will soon be replaced by the /Patriot/ -- which replaces all kinds of Hawk and HELIP versions. This conclusion was reached in March 1978 by the /Long Term Defense Program/ (LTDC) of NATO -- which studies the needs and development of the new weapons systems, primarily under the direction of the American supreme command of allied forces in Europe /(SHAPE)/. As a matter of fact, the LTDC decided that the Nike should be replaced by 1985, but also decided that only the United States and the Federal Republic of Germany would purchase the brand new Patriot. The Netherlands and Belgium were released from this duty; they could even

forget the Nike Hercules and the related personnel and withdraw them from Germany. However, in exchange for this savings of billions of francs, Belgium and the Netherlands would have to defend their ports with HELIP batteries.

Consequently, the Long Term Defense Program offered Belgium a unique opportunity to bring back home about 3,000 air force personnel and their families and to release means for the defense of the ports. But because the new missions and means would end up in the hands of the army, the air force -- faithful to the inter-service weapons rivalry -- immediately organized the opposition. The responsible officials of the Long Term Defense Program at NATO could not believe their ears when senior Belgian air force officers responsible for planning, together with /Colonel Cailleau/, insisted at NATO headquarters that the Belgian air force be allowed to play with the Nike and Patriot missiles whatever the costs. Hence the secrecy under which the modernization of the Nikes was carried out, the silent option on the Patriot and the opportunity which was taken away from the army to defend our ports with additional HELIPs and the newly available personnel.

What is more, at the beginning of 1979, the air force even managed, with the approval of the Ministry of Defense, to have our country sign a /memorandum of understanding/ for the purchase of the Patriot, together with the United States, Denmark, the Federal Republic of Germany, the Netherlands, France and Greece. As a matter of fact, today there is already a Belgian in Munich who represents us at the /NATO Patriot Management Organization/. This study group has promised us a completed study -- before the end of 1980 -- which is to determine whether the Patriot will be built by a consortium, in co-production with the Americans, or under an American license in Europe. Because the Patriot, like the HELIP, is a Raytheon weapons system and because ACEC-Charleroi is not only carrying out the lion's share of the HELIP order but also the modernization of the Nikes, it has already become a certainty that ACEC will also participate in the building of the Patriot.

The political question -- which NATO at one time answered in the negative -- of whether Belgium will need the Patriot in any case in the eighties and whether it is willing to lay down 30 billion francs for that, can scarcely be asked any longer. Indeed, a few Walloon air force officers and ACEC have already committed Belgium.

8463
CSO: 5100

GISCARD D'ESTAING'S NUCLEAR PROGRAM REMARKS AROUSE VARIED REACTIONS

Paris LE MONDE in French 20-21 Jan 80 p 15

[Text] In an article published on Saturday 19 January in RIPOSTE and entitled "Why Hide the Truth From the French?", Paul Quilles, Paris deputy and PS national secretary, answered Giscard d'Estaing's remarks on nuclear energy delivered on Friday over Europe I.

Quilles wrote: "France's involvement in a heavy nuclear program whose estimated development is the largest in the world, presents obvious risks and neglects other possible oil substitutes.

"Thus, little effort goes into developing rapidly new forms of energy, relaunching coal production and increasing energy savings.

"In the latter domain, large-scale investments would permit both to create employment and improve the extent of our energy independence, much more rapidly than is being done with nuclear power.

"Why is Giscard d'Estaing hiding the truth from the French?"

As for Michel Roland, CFDT [French Democratic Labor Confederation] confederal secretary, he declared in a communique: "The Harrisburg incident, breakdowns and radioactive leaks are so many realities. The president did not see fit to tell us what guarantees we have against such accidents. Knowing that EDF [French Electric Company] does not hesitate to open power stations with defects which can become serious later on, we have a right to raise questions.

CFDT never condemned a priori the peaceful use of the atom; in 1969 it even regretted the lack of action in that field. However, with its partners in the national petition, it will continue to demand more democracy in the choices, more diversification in the investments and, obviously, more safety for the workers and the population."

PSU [Unified Socialist Party] recalling that it is "The only political party to have clearly spoken immediately against the nuclear program," asserts:

"The government intends to impose its choice by truly hammering the public," and it disagrees with the economic plan's validity of information and figures advanced by the president of the republic.

Finally, the Paris ecologic movement, The Friends of Earth, states that "The president of the republic got involved in a publicity campaign for nuclear energy," and his interview was marked "By a series of sleights of hand and untruths on both a technical and economic standpoint."

Ciscard d'Estaing had recalled in his speech that he was hoping "The population living around nuclear power stations would gain a certain advantage," by benefiting from a reduced rate of 5 centimes per kilowatt. The implementation of this rate change will present many problems.

6857

CSO: 5100

PSF LEADERS DISAGREE ON USE OF BREEDER REACTORS

Paris LE MONDE in French 15 Jan 73 p 10

[Article by B. D.: "Selected Energy Policy Excludes Recourse to Breeder Reactor"]

[Text] The Socialist Party, for several years torn between the strong advocates of nuclear power at the CERES [Center for (Socialist) Studies, Research, and Education] and a base in which the voices of the ecologists are growing stronger, until now avoided speaking out too plainly. At a time when petroleum problems are accumulating, even if, as Francois Mitterrand has stressed, they are only an "epiphenomenon" of the economic crisis in the capitalist world, the Socialist Party must take a stand. Therefore, it is not at all surprising that the energy policy was one of the major topics of this convention, with approximately 100 amendments on the subject of nuclear power being submitted to the resolutions committee.

Reflecting past differences, the drafters of the socialist plan were unable to come to an agreement on nuclear power. Therefore, two principal options were presented to the militants, with breeder reactors being the chief bone of contention.

The first option, presented among others by Mr Quiles, a delegate from Paris, had the approval of the majority of the planning committee, and embodies the opinion that nuclear energy must "remain a transition energy measure while waiting for solar energy to take over"; consequently, "use of breeder reactors... no longer appears to be necessary."

The second option, introduced by Pierre Carassus and Michel Coffineau, representing the choice of CERES, stated: "It is not feasible to renounce, without further examination, breeder reactor technology, which at the proper time may render us independent as far as uranium is concerned, and it is still less feasible to create a permanent deadlock for the future concerning energy (fusion or fission)."

A third option, presented by the federations from Aude and Finistere, proposed the abandonment of nuclear power for the future and closing down of nuclear sites as soon as the socialists come to power. This was finally put to a vote along with the other two options, since attempts to combine the first two options--so that CERES would not seem to be such a small minority--had failed.

Mr Quiles text, slightly amended by the federation from Drome--so that, from today onward, the PS will not be committed after 1985--received 59.85 percent of the votes; the text which was inspired by the CERES and which is favorable to breeder reactors received 17.38 percent, and the proposal least [favorable to] nuclear power received 14.65 percent.

Therefore, the Socialist Party has an energy policy which revolves on three axes: to dissociate economic growth and energy consumption, thus promoting massive energy savings; to diversify and to ensure energy supplies, and especially, "to call a halt to the decline in coal production," even to increase it as Mr Quiles proposed in his speech; and finally, to stimulate new forms of energy, which would increase 30 million tons of oil equivalent per year by the end of the century, or three times more than present government estimates.

As far as nuclear power is concerned, since the PS is on the fence, the situation is now clear, the breeder reactor has been abandoned, but the PS agrees to complete the current nuclear program. After 1985, the decision to construct "approximately one section of 1,000 megawatts per year, on the average" has been suspended, but not abandoned. It is not necessary to make a commitment at the present time.

Strongly influenced by the report prepared by Mr Jean Saint-Geours for the European Communities, the energy policy of the PS chiefly stresses energy savings. As the Saint-Geours report stated, these savings could reach 20 percent to 35 percent for transportation, 15 to 35 percent for industry and agriculture, and 50 percent for the tertiary industries, while only a sustained growth would make possible the necessary investments for the realization of these objectives.

This policy is also consistent with a certain philosophy of development. In supporting the option which was adopted, Mr Michel Rocard said, "We will prefer a decentralized economy, one where energy autonomy will be assured by a close relationship between energy savings and large-scale assistance to all new forms of decentralized energy: solar, geothermic, tidal power." Hence, the idea that nuclear energy is a simple transition toward a "solar" 21st Century. This is a bet on the future, because today it seems more likely that nuclear energy represents the transition toward a growing return to coal rather than toward new types of energy.

9174
CSO: 5100

FRANCE

NEW POWERPLANT CONSTRUCTION MAY BEGIN IN APRIL

Paris LE MONDE in French 9 Jan 80 p 42

[Article by Jacques Courcelle: "Construction of the Nogent-sur-Seine Nuclear Plant May Begin Next April"]

[Text] On Monday 7 January, the Seine-et-Marne general council, presided over by Mr Jacques Roynette (PS [Socialist Party]), devoted a long discussion to the projected nuclear powerplant installation at Nogent-sur-Seine (Aube). The prefect, Mr Jean Brachard, gave a presentation on this project, giving a historical account and especially emphasizing the project's economic impact on Seine-et-Marne. He indicated that the construction site "would be a factor of economic rejuvenation for the people of southeast Seine-et-Marne, that its economic effects would last beyond the construction time, that the collectives near by would benefit by reduced electricity costs, and finally, that building a powerplant would create an opportunity to facilitate the financing of heavy equipment necessary to the departmental economy."

Mr Alain Peyrefitte, keeper of the seal and counsellor general of Bray, stated that, subject to the Council of State's opinion, the public utility edict will be signed in the next few weeks. The powerplant construction could begin in early April of 1980.

An EDF [French Electric Company] representative specified that the construction will be spread out over 6 years. One year to construct a platform to protect the nuclear power plant from floods and 5 years to build the powerplant itself, which will be technically ready in 1986 and operational in 1987.

The powerplant will permit this part of the Paris area to share with the Aube department the very large fiscal fallout (professional taxes).

However, Mr Fourre, president and spokesman of the socialist counsellors, emphasized the problems which could be provoked by building a large nuclear powerplant on the very edge of Paris, with its well known high density population. The installation of the powerplant poses many

questions for the ecology and the population's safety (protection of the underground water sources which are used to supply the capital's drinkable water, raising the temperature of the Seine). Mr Fourre asked for complete information on the measures which will be taken in case of technical accident. Mr Alain Vivian, socialist deputy, emphasized the risks which the Paris population would run if there were a war, a military bombing of this powerplant situated so near Paris.

Mr L'Huillier (PS) gave his evaluation that the employment "fallout" appeared rather scanty and the fiscal benefits very nebulous. Senator Paul Seramy (Center party) on the other hand gave out the idea that the plant was indispensable to the reenforcement of the Paris area's energy potential.

9374
CSO: 5100

FRANCE

BRIEFS

RADIOACTIVE LEAK PLUGGED--The leak found in the pipe works which discharge weakly radioactive effluents into the sea has been permanently plugged at The Hague reprocessing facility for irradiated combustibles (Manche).
[Text] [Paris LE MONDE in French 9 Jan 80 p 42] 9374

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Feb 22, 1980